PRO SERIES
Network Camera & Video Server
USER MANUAL

INTELLINET NETWORK SOLUTIONS

BRINGING NETWORKS TO LIFE

INT-PSNC-UM-1106-06

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Thank you for purchasing this INTELLINET NETWORK SOLUTIONS™ Pro Series Network Camera or Network Video Server. This user manual includes instructions for using and managing the camera on your network. Networking experience will be helpful when setting up and using this product. Updated versions of this document will be posted to www.networkipcamera.com as they become available.

Electromagnetic Compatibility (EMC)
This equipment generates radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
- Re-orient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment to an outlet on a different circuit than the receiver.
- Consult your dealer or an experienced radio/TV technician for help.
- Check that shielded (STP) network cables are being used with this unit to ensure compliance with EMC standards.

This equipment has been tested and found to comply with the limits for a Class B computing device pursuant to Subpart B of Part 15 of FCC rules, which are designed to provide reasonable protection against such interference when operated in a commercial environment.
Operation of this equipment in a residential area is likely to cause interference, in which case the user, at his own expense, will be required to take whatever measures may be required to correct the interference. This digital equipment fulfills the requirements for radiated emission according to limit B of EN55022/1998, and the requirements for immunity according to EN55024/1998 residential, commercial and light industry.

Safety
This equipment complies with EN 60950, Safety of Information Technology equipment.

Radio Transmission Regulatory Information
This equipment generates and radiates radio frequency energy, and must be installed and operated while maintaining a minimum body-to-camera distance of 3 feet (1 meter).
Tested to comply with FCC Standards FOR HOME OR OFFICE USE.
This product must be installed and used in strict accordance with the instructions given in the user documentation.
This product complies with the following radio frequency and safety standards:
Europe - EU Declaration of Conformity. This device complies with the requirements of the R&TTE Directive 1999/5/EC with essential test suites as per standards EN 301489: General EMC requirements for radio equipment; and ETS 300328: Technical requirements for radio equipment.
USA - Federal Communications Commission (FCC): This device complies with Part 15 of FCC Rules. Operation of the device is subject to the following two conditions:
1. This device may not cause harmful interference.
2. This device must accept any interference that may cause undesired operation.

Video Standard and Product Classification
As the video standard varies from country to country, users are asked to check it first and choose the right model. The two most common video standards used are NTSC and PAL. NTSC is the video system or standard used in North America and most of South America. In NTSC, 30 frames are transmitted each second. Each frame is made up of 525 individual scan lines. PAL is the predominant video system or standard mostly used overseas. In PAL, 25 frames are transmitted each second. Each frame is made up of 625 individual scan lines.

These are the products represented in this user manual:
550710: JPEG CMOS Network Camera for NTSC & PAL standards
503181: Wired MPEG4/JPEG CCD Network Camera for NTSC standard
550796: Wired MPEG4/JPEG CCD Network Camera for PAL standard
550253: Wireless MPEG4/JPEG CCD Network Camera for NTSC standard
550178: Wireless MPEG4/JPEG CCD Network Camera for PAL standard
550314: Wired MPEG4/JPEG CCD IR Network Camera for NTSC standard
550291: Wired MPEG4/JPEG CCD IR Network Camera for PAL standard
550321: Wireless MPEG4/JPEG CCD IR Network Camera for NTSC standard
550307: Wireless MPEG4/JPEG CCD IR Network Camera for PAL standard
550468: 2.0 Megapixel Wired MPEG4/JPEG CMOS Network Camera for NTSC & PAL standards
550482: 2.0 Megapixel Wireless MPEG4/JPEG CMOS Network Camera for NTSC & PAL standards
550376: Wired MPEG4/JPEG Network Video Server for NTSC & PAL standards
550420: Vandal-Proof Dome Camera for NTSC standard
550406: Vandal-Proof Dome Camera for PAL standard
550444: Vandal-Proof Dome Camera for NTSC standard
550413: Vandal-Proof Dome Camera for PAL standard

To determine your video standard, refer to the lists below.
PAL: Afghanistan, Algeria, Argentina, Austria, Australia, Bangladesh, Belgium, Brazil, China, Denmark, Finland, Germany, Hong Kong, Iceland, India, Indonesia, Iraq, Ireland, Israel, Italy, Jordan, Kenya, Kuwait, Liberia, Malaysia, Netherlands, Nigeria, Norway, New Guinea, Pakistan, Singapore, South Africa, Southwest Africa, Sudan, Sweden, Switzerland, Thailand, Turkey, Uganda, United Kingdom, United Arab Emirates, Yugoslavia, Zambia
NTSC: Canada, Chile, Costa Rica, Cuba, Dominican Republic, Ecuador, Japan, Mexico, Nicaragua, Panama, Peru, Philippines, Puerto Rico, South Korea, Taiwan, USA.
Users are asked to read the following before using the Pro Series Network Camera.

Important Notices

1. Camera surveillance laws may differ for each country. Contact the local authorities to avoid any surveillance law violations.
2. Note that the CCD lens that comes with the Pro Series Network Camera can be damaged permanently if exposed to direct sunlight. If your application demands prolonged exposure to sunlight, you should consider equipping it with a sun visor.
3. The Pro Series Network Camera is not weatherproof. Be aware of environmental specifications included in the manual. For outdoor use, use a weatherproof case to protect the camera from water, moisture or temperature (higher or lower than specifications). For camera cleaning, gently wipe with a clean, dry cloth.
4. Be sure to use only the DC adapter provided with your camera. Connecting the camera directly to AC current may cause electrical damage to the camera.
5. Be careful when handling the camera. Physical shocks can cause serious damage.
6. Be sure to mount the camera securely to avoid any personal injuries. Keep the camera out of reach of children.
7. If the camera does not operate properly, contact your local distributor. Do not disassemble the product, as that may void the warranty.

1: Product Overview

1.1 About the Pro Series Network Cameras and Video Servers

The Pro Series Network Cameras and Network Video Server are all-in-one networking devices that contain a digital color camera (or a connection for analog CCTV cameras), a powerful Web server, an optimized embedded operating system, hardware for image compression and a physical Ethernet connection. The products do not need any additional software or hardware. Simply provide power, connect an Ethernet cable and view from any computer on the network. For the Network Video Server, you need a conventional CCTV camera as your video input source.

The INTELLINET NETWORK SOLUTIONS Pro Series Network Cameras and Network Video Servers are ideal for surveillance applications that require high-quality, full-motion video and audio, as well as comparatively low bandwidth demands on the network. These products provide an easy user interface for remote access to receive the optimal synchronized video and audio from anywhere, anytime over the Internet with the popular Internet Explorer Web browser, as easy as surfing any regular Web sites. More than just a high-performance network camera, the Pro Series Network Cameras and Network Video Server also offer many advanced features to provide solutions such as remote surveillance, home/business security, audio/video conferencing, motion detection and more. ***NOTE:*** This user manual includes the Network Video Server whenever it refers to Pro Series Network Cameras.

1.2 Main Features and Benefits

Convenient Operation
The Pro Series Network Camera does not need any additional software or interaction with any other server. The only software needed is a common Web browser, such as Microsoft Internet Explorer 5.x or above.

Open Standards
The Pro Series Network Camera supports TCP/IP networking, SMTP e-mail, FTP, HTTP and other Internet-related protocols. The camera can be used in a mixed operating system environment with Windows, Unix, Mac and OS/2. It integrates easily into other www/Intranet applications and CGI scripts.

Simple Administration
Using a standard Web browser, you can configure and manage the Pro Series Network Camera directly from its own embedded Web pages. The embedded operating system is upgradeable through the network; check with your local INTELLINET NETWORK SOLUTIONS dealer for firmware upgrades.

External Devices
The auxiliary Input/Output connector on the camera allows you to connect to a variety of external devices, such as IR sensors, switches and alarm relays.

Security
Your Pro Series Network Camera includes a self-contained Web server, which means that digital images can be secured like any other Internet host. Your network administrator, using the unit's security settings in combination with an organization's Internet firewall, normally implements data protection. The administrator can decide whether individuals, groups or the whole world may access the camera. The Pro Series Network Camera supports multi-user password protection.

Compression and Performance
With a variable frame rate dependent on the image quality and bit rate, the camera delivers MPEG4 video at up to 30 images per second.

Dual Mode Compression (only certain models)
For application providers, system integrators and other APs, this camera supports three types of video: 1) MPEG4 video; 2) M-JPEG compression; and 3) MPEG4+M-JPEG mode.

Full Duplex Two-Way Audio (only certain models)
Full duplex two-way audio is available by connecting an external microphone and speaker to the camera.

IEEE 802.3af Standard PoE (Power over Ethernet) Supported

Software
IP Installer for quick installation
Multi-Viewer for viewing four cameras in a screen
ETSP Client Motion Detection Recording Utility
Check http://www.networkipcamera.com for latest versions.

2: Physical Description

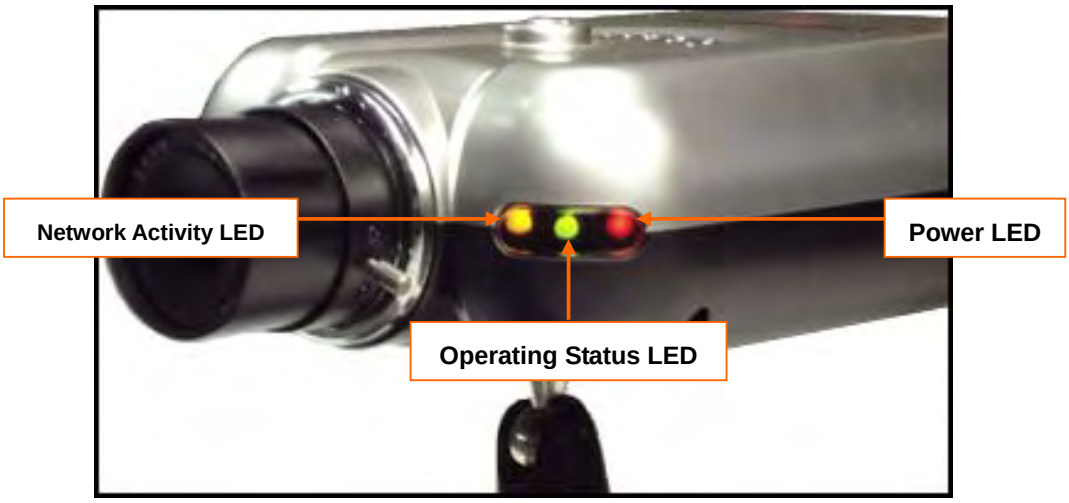
2.1 Package Contents

Check all items packed inside the box as listed below.

ITEM	DESCRIPTION
Network Camera or Video Server	MPEG4 Network Camera
Installation CD	IP Installer, upgrade program, manual, Multi-Viewer, etc.
Power Supply	AC power adapter and power cord
Stand	Wall & table stand*
Connection Cable	RS-232 cable
User Manual	Hard-copy book

** You can use a standard camera stand or tripod for the Pro Series (MPEG4) Network Camera.*

2.2 MPEG4 CCD and CMOS Camera
Front View

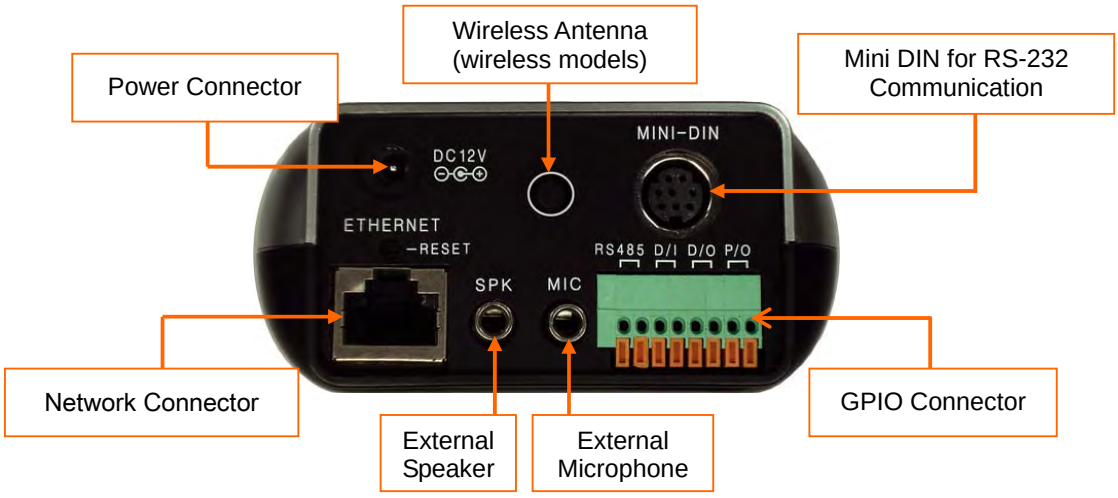


Power LED (Red): Once power is supplied to the camera, the red LED will light.

Operating Status LED (Green): This LED indicates the camera's operating status. Once power is supplied, the LED lights and then blinks once every second as long as the video is transmitted on the network during normal operation. When there is no video transmission, the LED stops blinking. Under an event-trigger situation, the green LED becomes red and blinks rapidly. During simultaneous operation of event-trigger capture and video monitoring, it blinks rapidly and alternates between red and green. When you click the "camera off" button in the administrator's menu, the green LED turns yellow, which shows that your IP camera has stopped transmitting video and audio.

Network Activity LED (Yellow): This LED indicates network activity. When lit, the network is up and running; when off, the network is down and not working.

Rear View



Power Connector: Only use the supplied AC adapter to avoid any possible damage from electric shock.
Network Connector: Connect 10Base-T Ethernet or 100Base-TX Fast Ethernet cable.
GPIO Connector: To connect external devices such as infrared sensors, alarms or motion detectors (refer to Appendix F: I/O Connector).
Mini DIN Connector: To connect external devices such as the external zoom/focus lens mechanism, or to connect directly to a serial port for camera configuration via HyperTerminal.
SPK: Use to connect to an external speaker for audio communication. The audio sent over the network from a connected client computer can be delivered through this externally connected speaker.
MIC: The external microphone for audio input. The live audio can be captured and transmitted to the connected camera client via the use of this MIC.
NOTE: The Pro Series Network Camera is compatible with 3.5mm stereo microphones. If you are a 3.5mm mono microphone user, use the included 3.5mm stereo plug to two 3.5mm mono jack converter. Then you can utilize two mono microphones simultaneously.
RESET: Restore the factory default settings.

2.3 MPEG4 CCD IR Camera

Infrared Emitter Diodes
LEDs automatically turn on in the dark.
Light Sensor
Measures the light level and activates the IR LEDs in the dark.

The IR camera has the exact same connectors and LEDs as the standard models. The difference is the lens and the CCD image sensor.

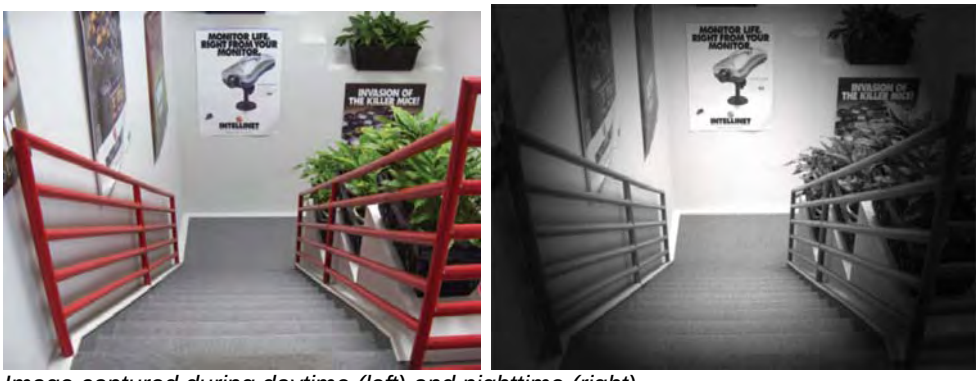
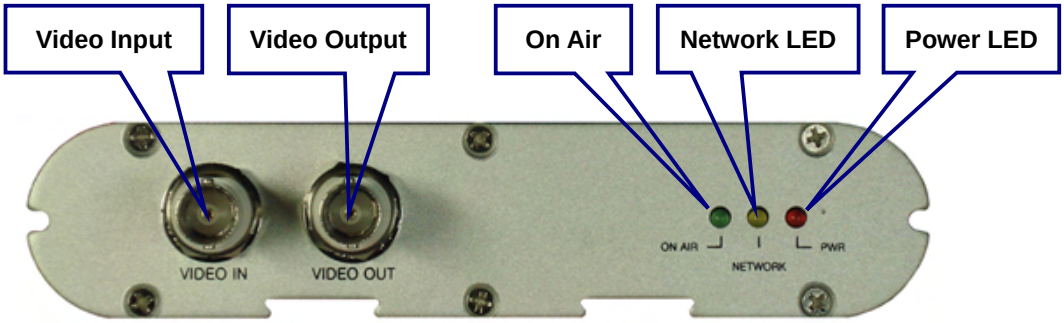


Image captured during daytime (left) and nighttime (right)

2.4 Network Video Server

Video Input: To input video signal through a coaxial cable
Video Output: To output video signal through a coaxial cable.



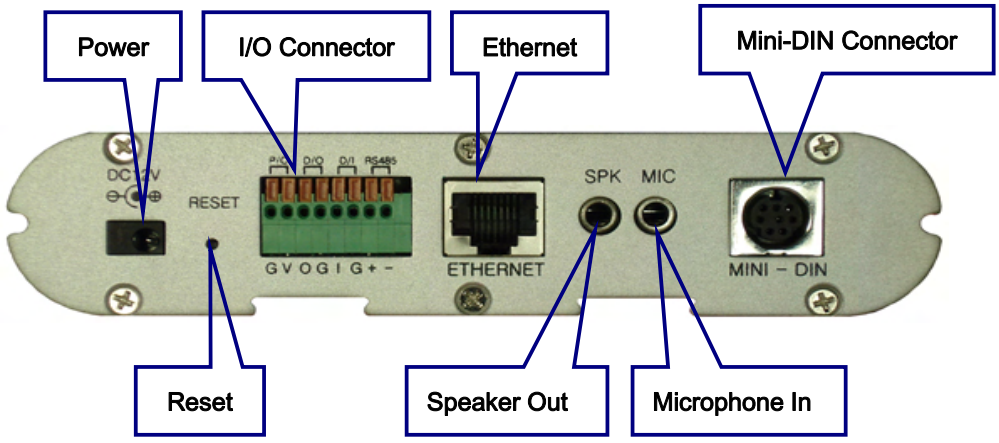
On Air LED (Green): This LED indicates the Video Servers operating status. Once power is supplied, the LED lights and then blinks once every second as long as the video is transmitted on the network during normal operation. When there is no video transmission, the LED stops blinking. Under an event-trigger situation, the green LED becomes red and blinks rapidly. During simultaneous operation of event-trigger capture and video monitoring, it blinks rapidly and alternates between red and green. When you click "Video Server off" in the administrator's menu, this green LED turns yellow, which shows that the IP Video Server has stopped transmitting video and audio.

Network Activity LED (Yellow): This LED indicates network activity. When lit, the network is up and running; when off, the network is down and not working.

Power LED (Red): Once power is supplied to the Video Server, the red LED will light.

Power Connector: Only use the supplied AC adapter to avoid any possible damage from electric shock.

RESET: Restore the factory default settings.



I/O Connector: To connect external devices such as infrared sensors, alarms or motion detectors (refer to Appendix F: I/O Connector).

Ethernet (Network Connector): Connect 10Base-T Ethernet or 100Base-TX Fast Ethernet cable.

SPK: Use to connect to an external speaker for audio communication. The audio sent over the network from a connected Video Server client can be delivered through this externally connected speaker.

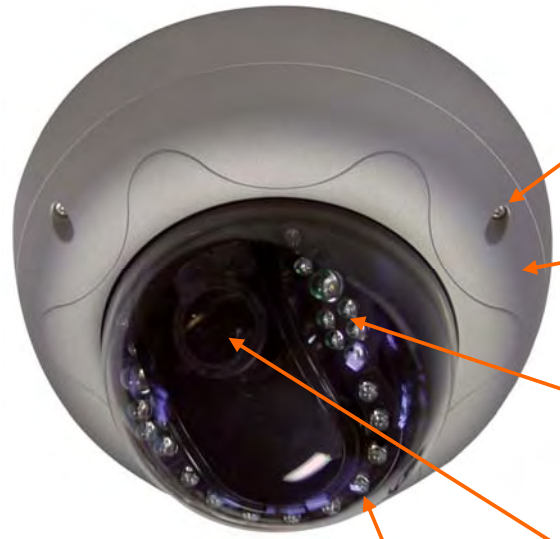
MIC: The external microphone for audio input. The live audio can be captured and transmitted to the connected Video Server client by using of this port.

Mini-DIN Connector: To connect external devices such as the external zoom/focus lens mechanism, or to connect directly to a serial port for Video Server configuration via HyperTerminal.

2.5 Vandal Proof Dome Camera

Front View

(model shown: Day/Night version)



Tamper-proof screws
A special wrench is included in the product packaging to open the top cover in order to adjust the position of the lens.

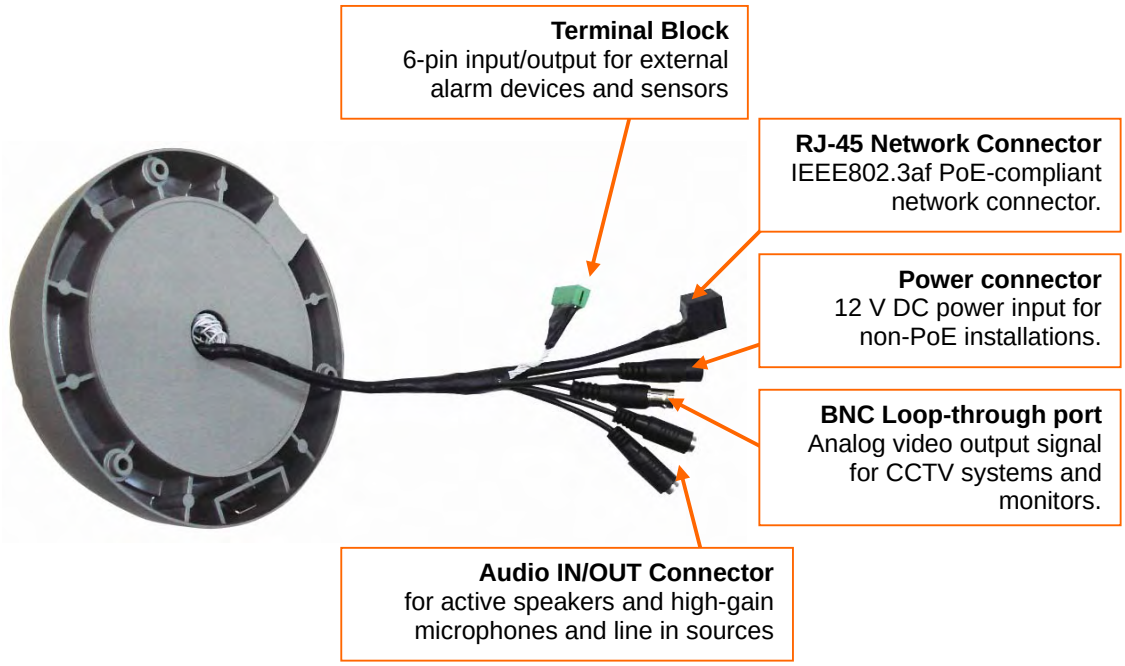
Vandal-proof dome housing
Shock-resistant housing protects the dome camera.

Infrared Emitter Diodes
LEDs automatically turn on in the dark.

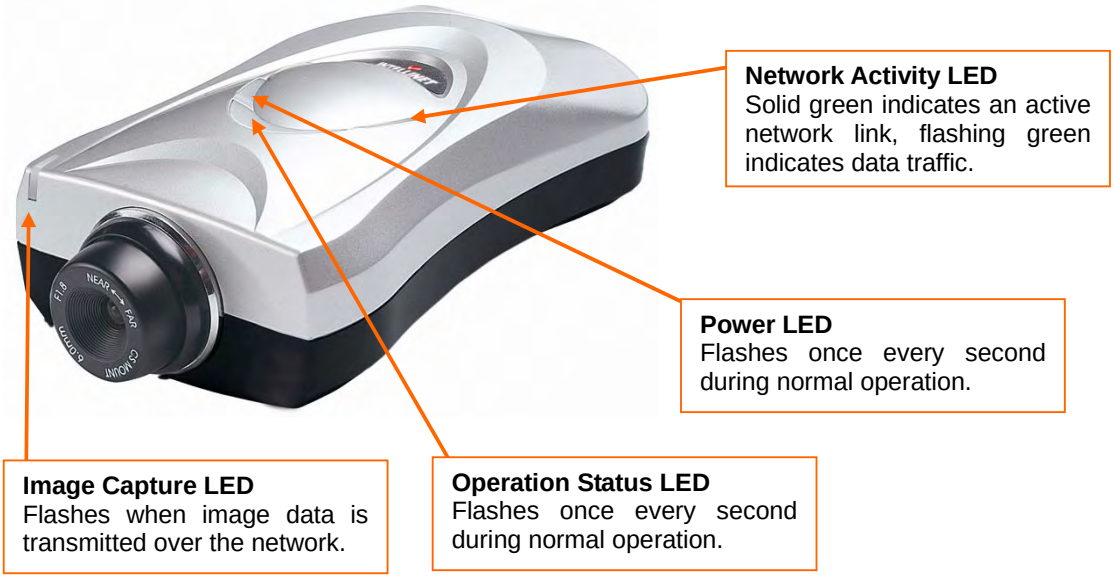
Vari-focal lens 4-9 mm
Adjust focus and field of view (see Hardware Installation guide for additional information).

Dome Glass
Clear dome bubble.

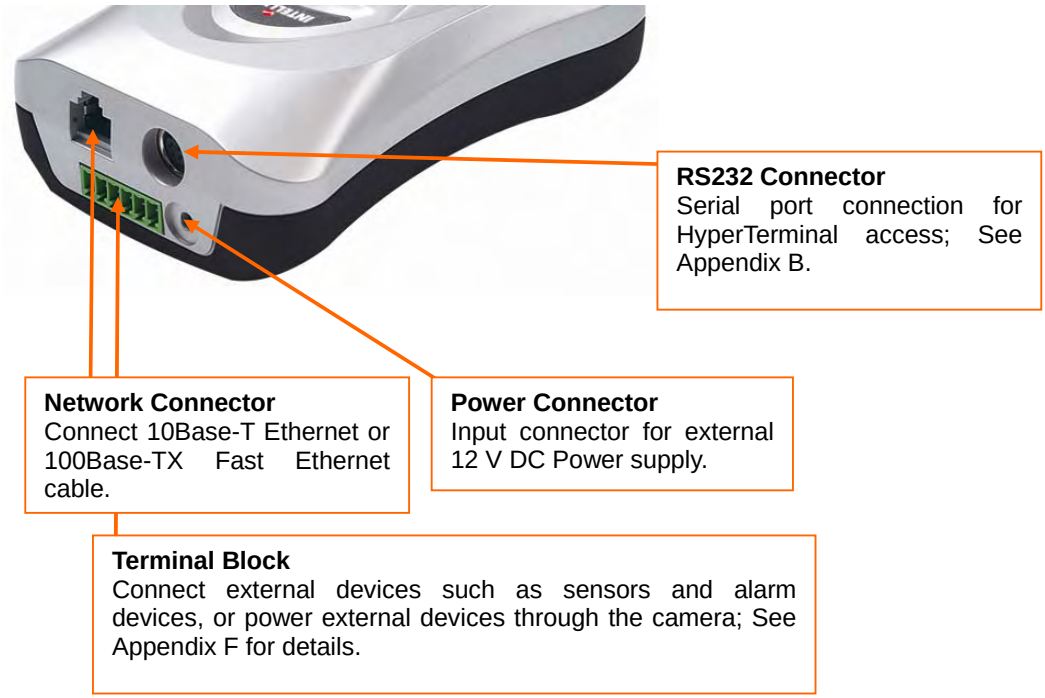
Rear View


Terminal Block
6-pin input/output for external alarm devices and sensors
RJ-45 Network Connector
IEEE802.3af PoE-compliant network connector.
Power connector
12 V DC power input for non-PoE installations.
BNC Loop-through port
Analog video output signal for CCTV systems and monitors.
Audio IN/OUT Connector
for active speakers and high-gain microphones and line in sources

2.6 JPEG CMOS Camera 550710
Front/Top View


Network Activity LED
Solid green indicates an active network link, flashing green indicates data traffic.
Power LED
Flashes once every second during normal operation.
Image Capture LED
Flashes when image data is transmitted over the network.
Operation Status LED
Flashes once every second during normal operation.

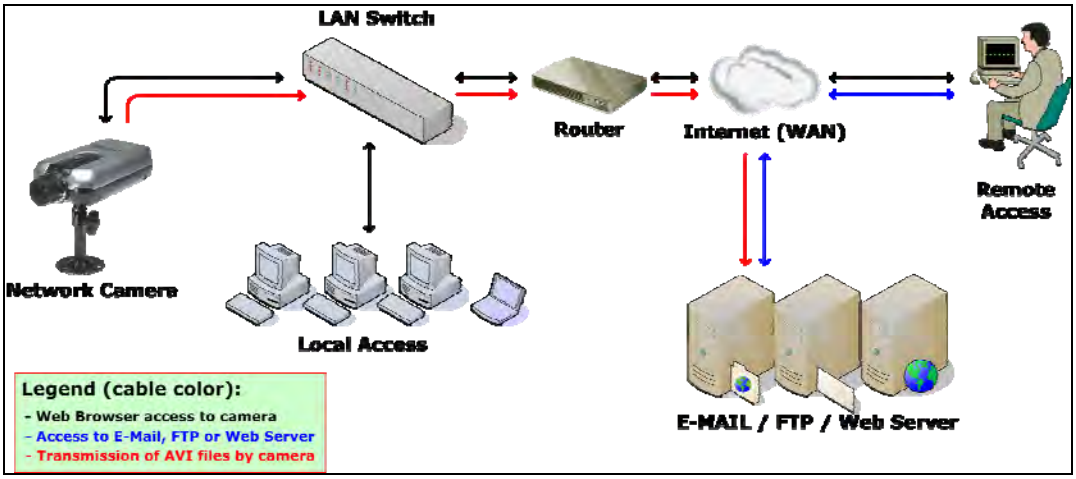
Rear View


RS232 Connector
Serial port connection for HyperTerminal access; See Appendix B.
Network Connector
Connect 10Base-T Ethernet or 100Base-TX Fast Ethernet cable.
Power Connector
Input connector for external 12 V DC Power supply.
Terminal Block
Connect external devices such as sensors and alarm devices, or power external devices through the camera; See Appendix F for details.

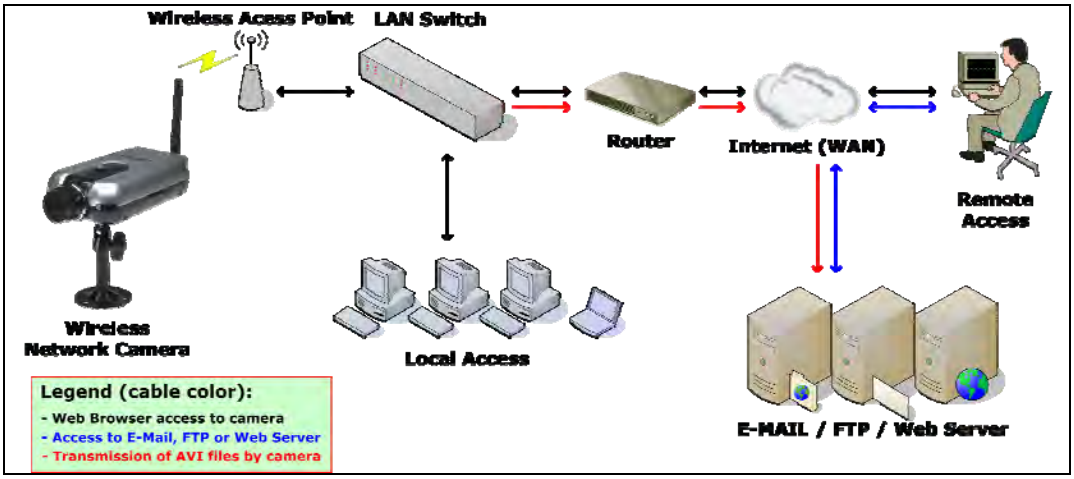
3: Installation Summary and Examples

1. Connect the Ethernet and power to the Pro Series Network Camera.
2. Install and launch the IP Installer program on the enclosed CD.
3. Assign an IP address and network settings.
4. Securely mount the camera. Owners of the indoor fixed dome camera need to refer to the included Hardware Installation guide.
5. Adjust the lens focus.

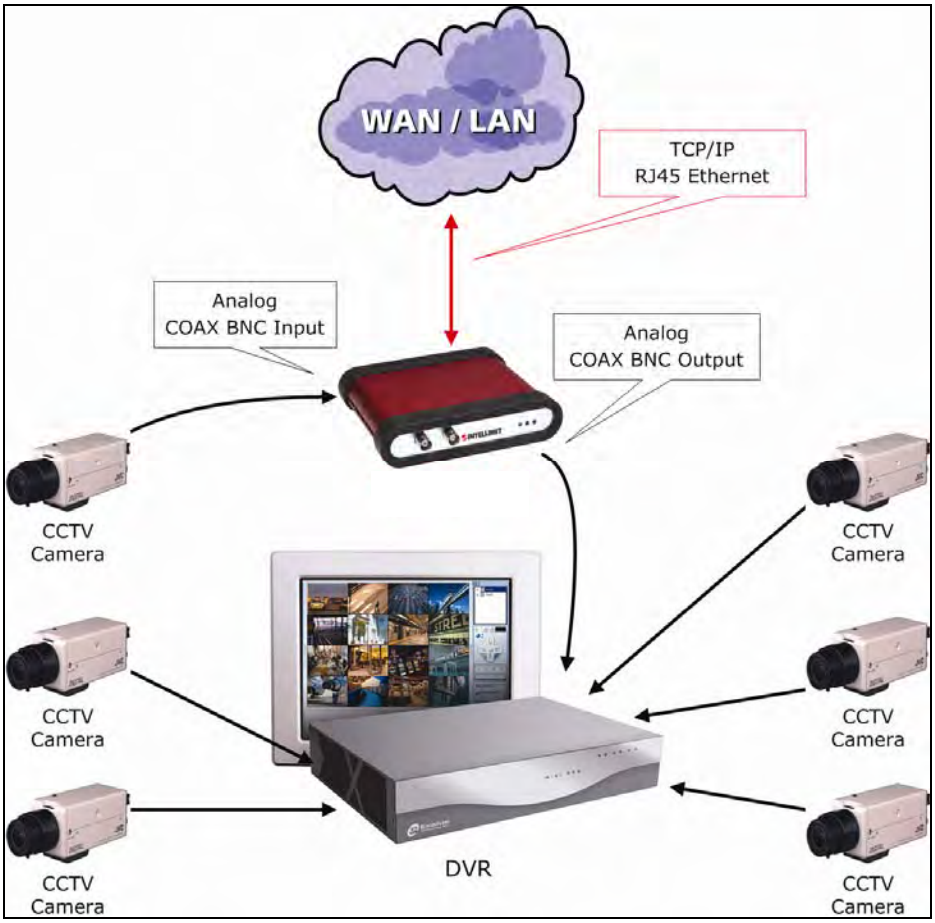
Installation Example: Wired Camera



Installation Example: Wireless Camera



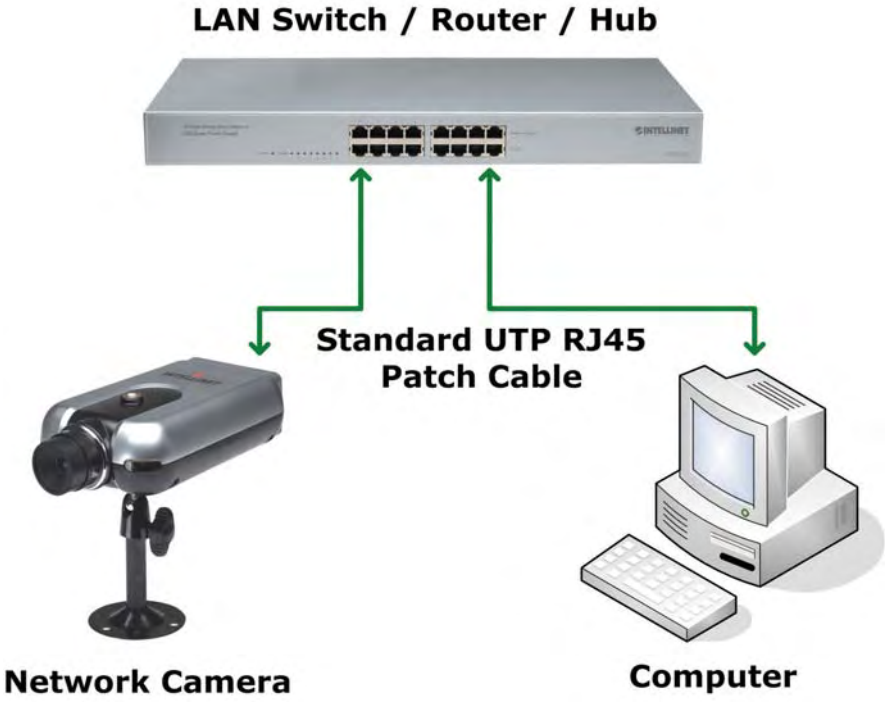
Installation Example: Network Video Server



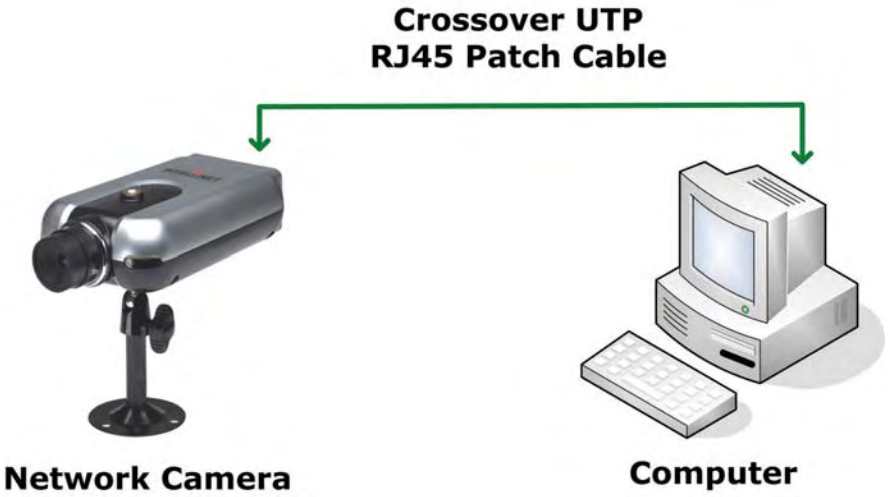
4: Assigning an IP Address and Accessing the Camera's Homepage

4.1 Connecting the Camera to a PC

Connect with a direct cable (non-crossover UTP cable) when connecting the camera to a switch, hub or router.

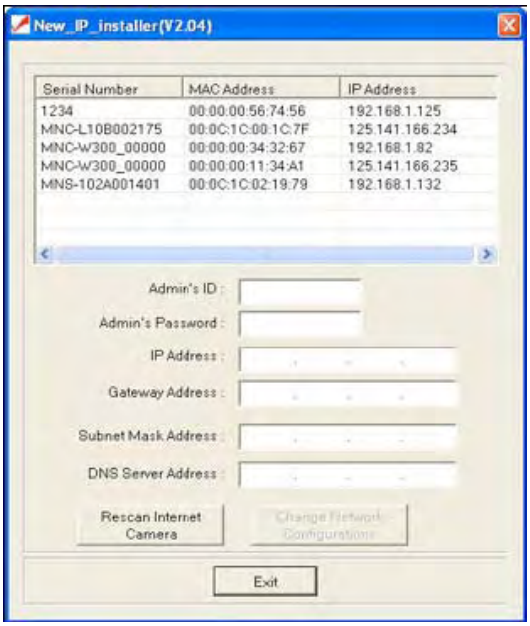


Connect with a crossover UTP cable when connecting the camera to a PC.



4.2 Setting up the IP Address Using IP Installer

To access the camera, you need to assign an appropriate network IP address.
Run the IP address installation program (IP Installer.exe) on a PC that is connected to the same local network as the camera.
You can download IP Installer from http://www.networkipcamera.com.
IP Installer is compatible with Windows 9x, Me, 2000, XP and Vista.



1. Run IP Installer after the camera is booted (wait until the Operating Status LED blinks every second).

2. Once IP Installer is run, the panel shows every camera connected on the local network.
From the cameras listed, select one to assign a new IP address (every Pro Series Network Camera has a factory default IP address).
NOTE: The MAC address can be found on the underside label of the camera. To choose a camera, click on its MAC address on the list.

3. Enter the administrator ID and password in the blank (default ID and password are both “admin") to assign or change the IP address for the camera and setup.

4. Enter the IP address, gateway address, subnet mask address, DNS server address and server IP address assigned by the network administrator. (When the addresses are not assigned properly, you cannot access the camera.) The server IP address does not need to be filled out at this time.

5. After entering all addresses for the camera, click on "Change Network Configurations."
The message shows up if all the information is set up properly. Then click the "OK" button.

NOTE: After changing the network configuration, it may take a little time to reboot the camera in order to access the camera’s homepage.

4.3 Accessing the Camera's Homepage

Access the camera to monitor real-time images over the Internet and configure the camera settings through any standard Web browser on a local or remote network. The following Web browsers are supported.
- MS Internet Explorer 5.x, 6.x and 7.x (ActiveX + Java)
- MOZILLA Firefox 1.x., 2.x (Java)
- MOZILLA 1.x (Java)
- Opera (Java)
- Konqueror (Java)

The INTELLINET NETWORK SOLUTIONS Pro Series Network Camera supports two connection methods: ActiveX for Microsoft's Internet Explorer users on Windows systems; and Java for all other Web browsers and operating systems, including MacOS and Linux, and Windows when using a different Web browser than MS Internet Explorer.

ActiveX offers faster performance and enhanced features, such as video recording via Web browser and two-way audio. Using ActiveX, however, requires the user to be logged in as a computer administrator. Not everybody has this ability. Furthermore, ActiveX is often banned from use in corporate environments for security reasons.

Java represents the universal alternative to ActiveX. It can be used on nearly all common computer operating systems and with almost any common Web browser. The camera primarily supports Java by Sun Microsystems, but it is also compatible to Microsoft's Java VM. Sun's Java can be downloaded from http://www.java.com.
Note: In order to utilize Java, the camera must be operating in JPG Stream mode (see section 6.6 System Configuration).

Before you attempt to connect to the camera with your Web browser, make sure that your setup meets the following requirements:

a) You have assigned a valid IP address to your camera. The IP address of the camera is in the same subnet as your computer.

b) You use MS Internet Explorer and have admin authority to install the ActiveX control.

c) You chose to access the camera using Java and have either Java version (SUN or Microsoft) installed in your computer.

Starting the Web Browser

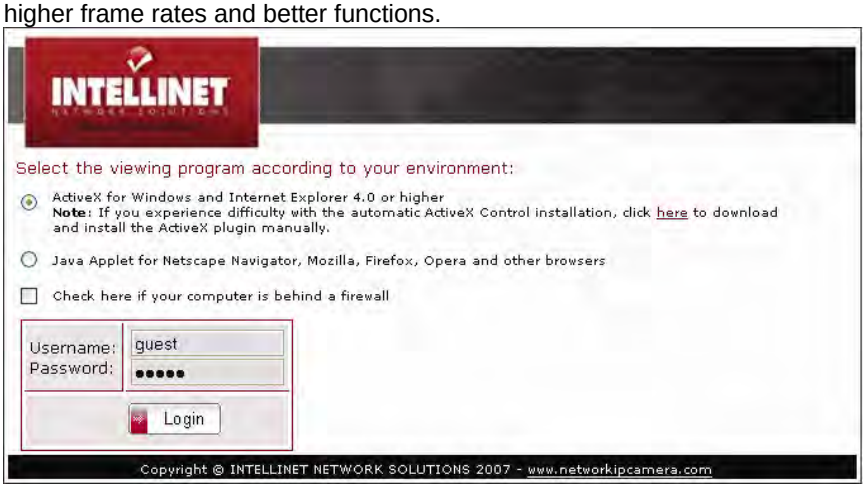
Start your Web browser, entering your camera's IP address on the address bar in order to access the login page. The default IP address is 192.168.1.221.

Login Page

After you open the camera address, you will be connected to the login page of the camera. The login page looks slightly different, depending on the Web browser you are using, and depending on the streaming mode the camera is set to (see section 6.6 System Configuration).
Below is an overview of the different login screens and stream modes.

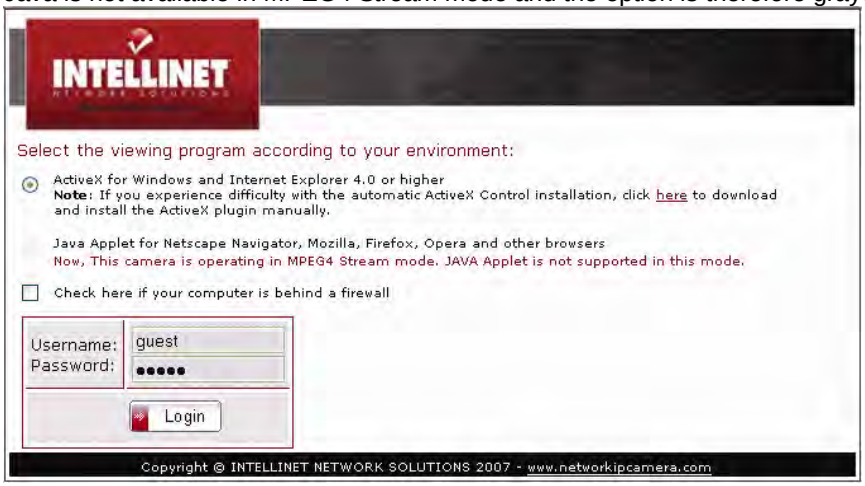
MS Internet Explorer – JPEG Stream Mode

Both options, ActiveX and Java, are available in this operational mode. If you can run and install ActiveX controls, you should select ActiveX as your preferred viewing program, as it offers higher frame rates and better functions.


INTELLINET
Select the viewing program according to your environment:
ActiveX for Windows and Internet Explorer 4.0 or higher
Note: If you experience difficulty with the automatic ActiveX Control installation, click here to download and install the ActiveX plugin manually.
Java Applet for Netscape Navigator, Mozilla, Firefox, Opera and other browsers
Check here if your computer is behind a firewall
Username: guest
Password:
Login
Copyright © INTELLINET NETWORK SOLUTIONS 2007 - www.networkipcamera.com

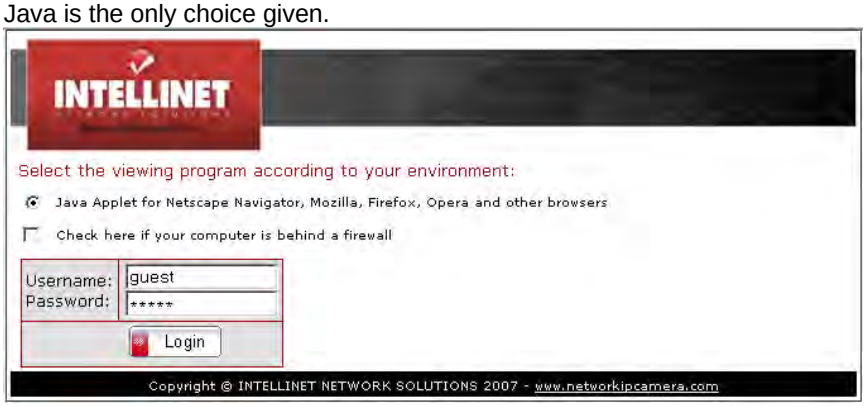
MS Internet Explorer – MPEG4 Stream Mode

Java is not available in MPEG4 Stream mode and the option is therefore grayed-out.


INTELLINET
Select the viewing program according to your environment:
ActiveX for Windows and Internet Explorer 4.0 or higher
Note: If you experience difficulty with the automatic ActiveX Control installation, click here to download and install the ActiveX plugin manually.
Java Applet for Netscape Navigator, Mozilla, Firefox, Opera and other browsers
Now, This camera is operating in MPEG4 Stream mode. JAVA Applet is not supported in this mode.
Check here if your computer is behind a firewall
Username: guest
Password:
Login
Copyright © INTELLINET NETWORK SOLUTIONS 2007 - www.networkipcamera.com

Non-MS Internet Explorer – JPEG Stream Mode

Java is the only choice given.


INTELLINET
Select the viewing program according to your environment:
Java Applet for Netscape Navigator, Mozilla, Firefox, Opera and other browsers
Check here if your computer is behind a firewall
Username: guest
Password:
Login
Copyright © INTELLINET NETWORK SOLUTIONS 2007 - www.networkipcamera.com

Non-MS Internet Explorer – MPEG4 Stream Mode

Java is the only choice given, but the warning message tells you that even though you are able to login you won't be able to see the live image. You still can access the administration menu to make changes to the settings.

INTELLINET
Select the viewing program according to your environment:
Java Applet for Netscape Navigator, Mozilla, Firefox, Opera and other browsers
This camera is operating in MPEG4 Stream mode. JAVA Applet is not supported in this mode.
Check here if your computer is behind a firewall
Username:
guest
Password:
*****
Login
Copyright © INTELLINET NETWORK SOLUTIONS 2007 - www.networkipcamera.com

Camera model 550710 does not support MPEG4 streaming and the options shown above do not apply. The other options are described below.

Username and Password

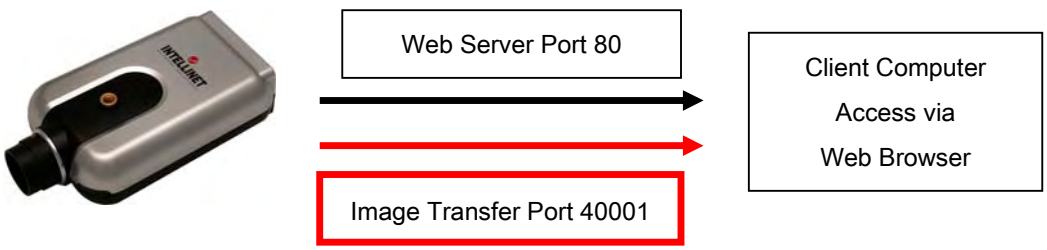
Enter a username and password to access the camera. The camera has two default user accounts.

- Administrator account: View live image and change the camera settings.
  Username: admin / Password: admin
- Guest account: View the live image, but no access to any camera settings.
  Username: guest / Password: guest

Behind a Firewall

If your PC is connected to a network with a firewall, you may not view real-time video properly because the video TCP port is blocked.
The camera operates on two important ports. One port is the Web server port (default = 80). The other port is the image transfer port (default = 40001). The camera sends the user interface pages (such as the login page) via TCP/IP port 80 and the image stream through the Image Transfer Port 40001. If for whatever reasons the camera cannot send you data via the Image Transfer Port (e.g., because the port may be blocked on the client computer) or, in case you access the camera remotely over the Internet, the port may not be properly opened and forwarded in the router, and you will not be able to see the live image of the camera.
A blocked image transfer port is the most common cause for display problems.

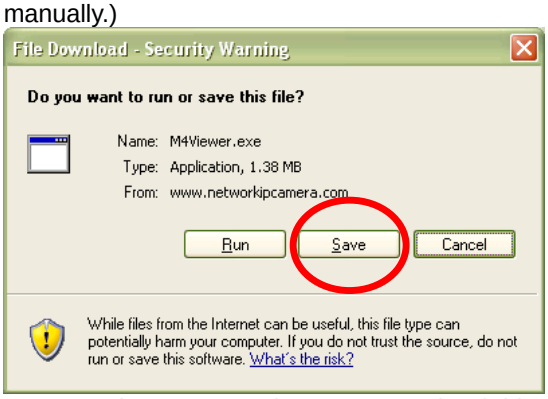
As a rule:
Whenever you can see the login page in your Web browser but no live video shows up on the main camera live screen, you should activate this option.



ActiveX Installation for MS Explorer Users (automatic)
The first time you login to the camera using ActiveX, you are notified that a required plug-in / ActiveX control is required. You need to allow the installation of ActiveX by clicking "Yes" to the question "Do you want to install the program?" on the pop-up window. The installation will then take place. It is normal for this process to take up to 30 seconds. After the installation you will be taken to the Network Camera Homepage.
If you do not see the message concerning the ActiveX installation, this can have different causes:
- you are not logged in to your computer as an administrator
- the security settings on your system (Internet Options) prevent the installation of signed ActiveX controls

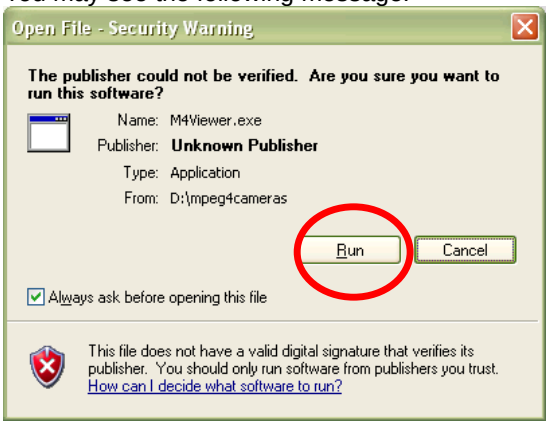
ActiveX Installation for MS Explorer Users (manual)
If the ActiveX program fails to install automatically, you can install it manually. Administrator rights are still required.

First you need to download M4Viewer.exe from the Web site www.networkipcamera.com. You can find the link on the login page of the camera. (**Note**: If you experience difficulty with the automatic ActiveX Control installation, click here to download and install the ActiveX plug-in manually.)

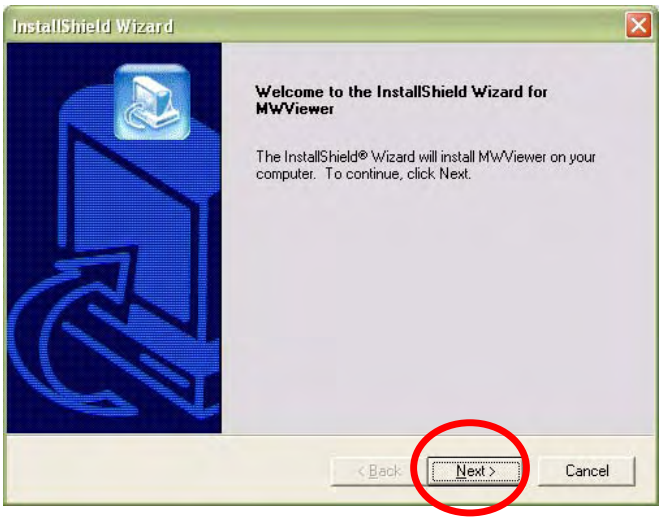

File Download - Security Warning
Do you want to run or save this file?
Name: M4Viewer.exe
Type: Application, 1.38 MB
From: www.networkipcamera.com
Run
Save
Cancel
While files from the Internet can be useful, this file type can potentially harm your computer. If you do not trust the source, do not run or save this software. What's the risk?

Save M4Viewer.exe on the computer's hard drive. Once the download is completed, you need to run the program by double-clicking it.

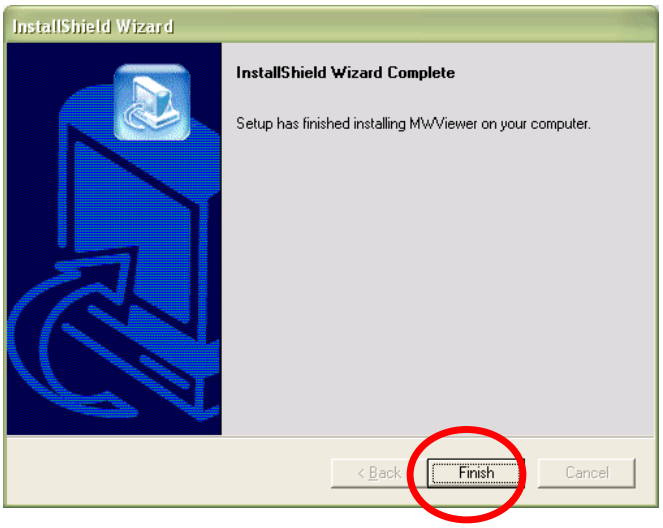
You may see the following message:


Open File - Security Warning
The publisher could not be verified. Are you sure you want to run this software?
Name: M4Viewer.exe
Publisher: Unknown Publisher
Type: Application
From: D:\mpeg4cameras
Run
Cancel
Always ask before opening this file
This file does not have a valid digital signature that verifies its publisher. You should only run software from publishers you trust.
How can I decide what software to run?

Click on "Run" to proceed with the installation.


InstallShield Wizard
Welcome to the InstallShield Wizard for MWViewer
The InstallShield® Wizard will install MWViewer on your computer. To continue, click Next.
< Back
Next >
Cancel

Click "Next" to continue with the installation.

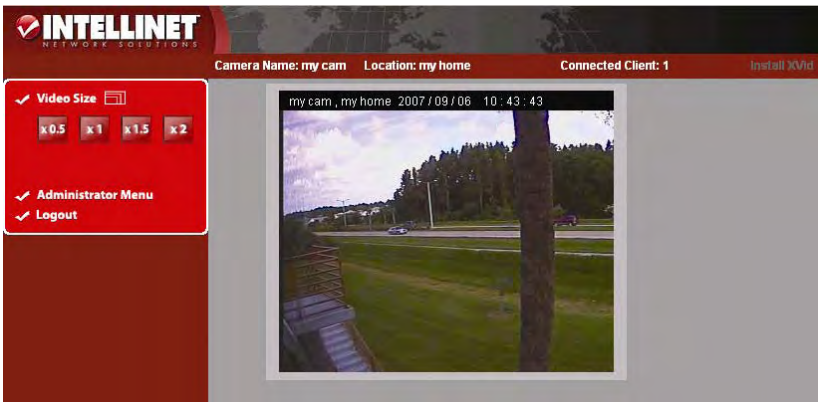


When you see the message above, you have successfully installed the ActiveX control.

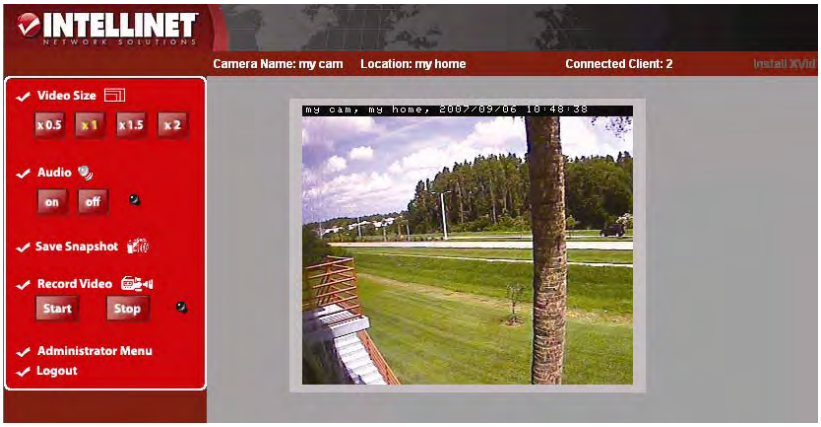
Restart MS Internet Explorer and re-connect to the camera.

4.4 Homepage Options (MPEG4 Cameras)

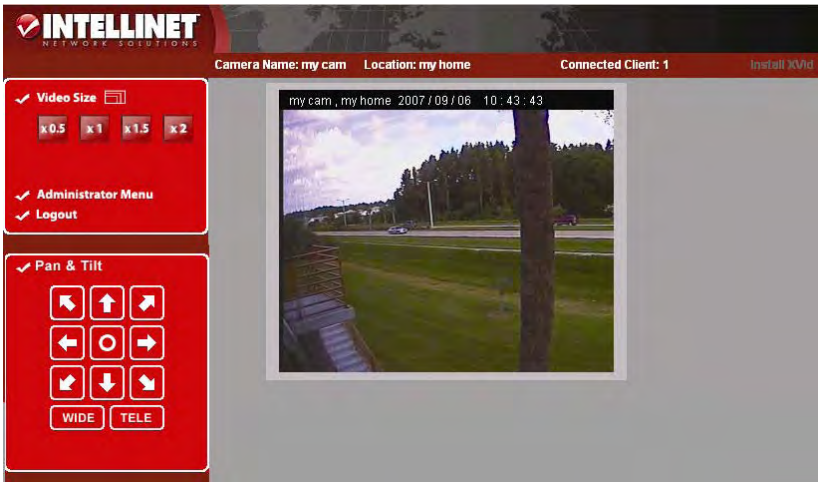
Once the login procedure is complete, you can view the Pro Series (MPEG4) Network Camera homepage. Below is an overview of the different pages for the different models for both Java and ActiveX.



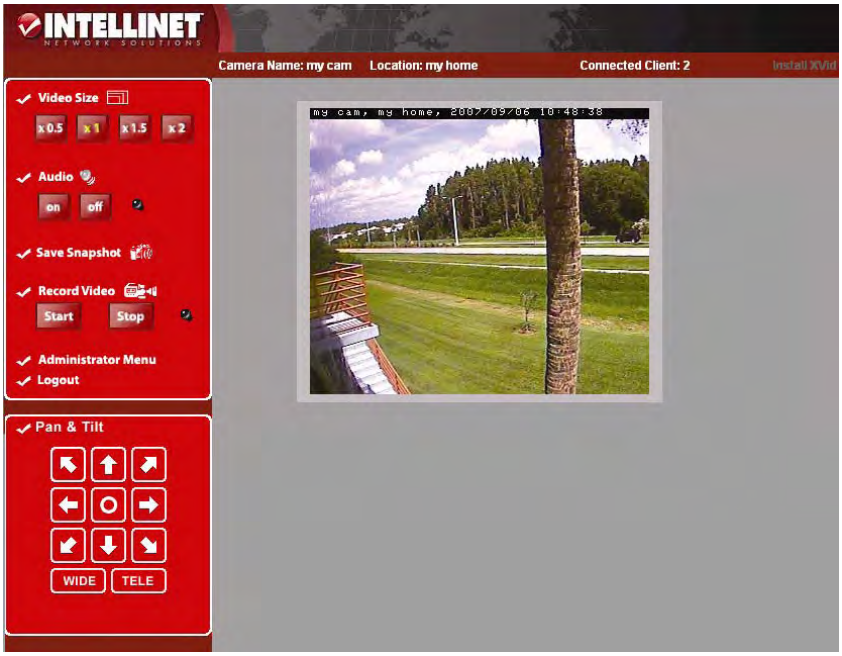
MPEG4 CCD Cameras - Java version



MPEG4 CCD Cameras - ActiveX version



MPEG4 CMOS Cameras with Digital Pan Tilt Zoom - Java version



MPEG4 CMOS Cameras with Digital Pan Tilt Zoom - ActiveX version

Video Size
You can select a viewing image size from 0.5 to 2. This function represents a digital zoom. It does not change the physical resolution of the image. At high resolution (D1) the options "x1.5" and "x2" are not available.

Audio
Select audio "on" for starting audio communication; select "off" to stop audio communication over the network with the external microphone and speaker connected to the camera.
If Audio is deactivated in the system settings of the camera, clicking the "on" button results in the error "Audio is disabled by Admin."

Save Snapshot
To save only one image, press "Save Snapshot" and then select a folder. The image is saved as a JPEG file (with the default file name composed of the date and time: image_yyyy_mm_dd_hh_mm_ss.jpg).

Record Video
Users can save real-time images from the camera on a PC. Click "Start," then select the folder to save the images in. (The image is saved as an AVI file.) Once the camera starts to save images, the green LED indicator will start blinking. To stop saving, click "Stop" and the LED indicator will stop blinking. You can view a saved image with Windows Media Player or Real-Time. For the initial playback of a saved image, click "Install XviD."

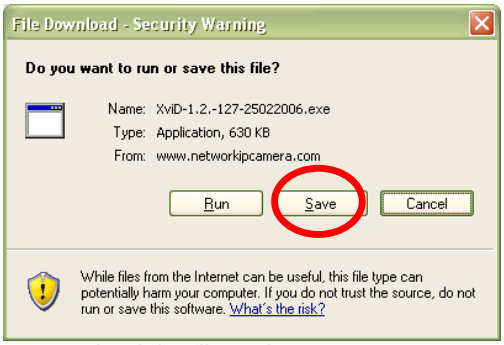
***NOTE*:** In Record Video mode, the video recording will be saved into a file different name every 20 minutes (for example: file name 2002_04_22_15_00, file name 2002_04_22_15_20…).
If you assign the file name in the first instance, not using default file name, the file name for the first 20 minutes will be the assigned name but the names of subsequent files are composed as "user assigned name_ yyyymmdd_hhmmss.avi."

Administrator Menu
This button is for accessing the administration menu. However, only the user who has authority as an administrator can access the page with administrator's ID and password (see Configuring Administration Menu).

Logout
User can go back to the Login page by using the "Logout" button.

Connected Clients
Shows how many users are currently viewing the camera image.

Install XviD
In order to view the video, you have recorded in your computer, the XviD codec must be installed. If the video does not play back correctly in Windows Media Player, you will need to install the XviD codec on your system. The link on the camera homepage lets you download the XviD installer to your computer. You then need to install the codec and restart your computer. After that, your computer will play back the recorded camera video with Windows Media Player.

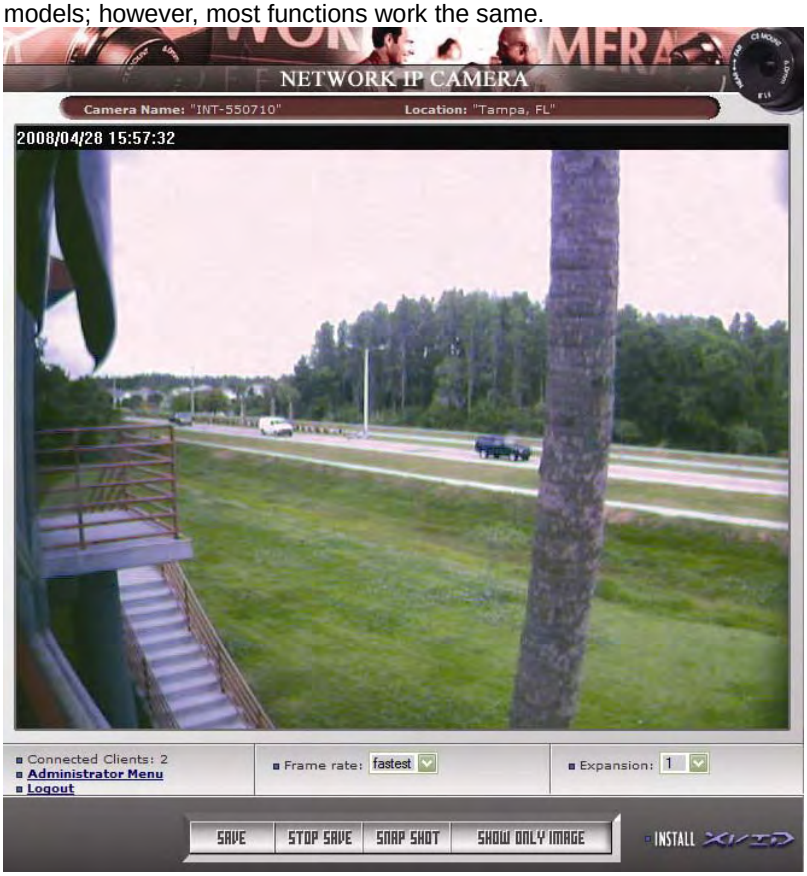

File Download - Security Warning
Do you want to run or save this file?
Name: XviD-1.2.-127-25022006.exe
Type: Application, 630 KB
From: www.networkipcamera.com
Run
Save
Cancel
While files from the Internet can be useful, this file type can potentially harm your computer. If you do not trust the source, do not run or save this software. What's the risk?

1. Download the file to the computer.
2. Run the installer and follow the instructions on the screen.

Pan & Tilt (only certain models)
With these buttons, you can control the digital Pan Tilt Zoom of the camera. Click on "TELE" to zoom in to the image and use the direction buttons to change the viewing area. Click on "WIDE" to zoom out to see the entire image.
This function is only available in the MPEG4 CMOS camera models.

4.5 Homepage Options (JPEG CMOS Camera 550710)

The camera homepage of the 550710 camera looks different than the screens of the other models; however, most functions work the same.



Expansion

You can select a viewing image size from 0.5 to 2. This function represents a digital zoom. It does not change the physical resolution of the image. At high resolution (VGA) the options "x1.5" and "x2" are not available.

Frame rate

You can control the frame rate of the video with this option. Different values are available, starting at "0.1 fps" (one image every 10 seconds) ending at "fastest" (max. 30 fps).

Show Only Image

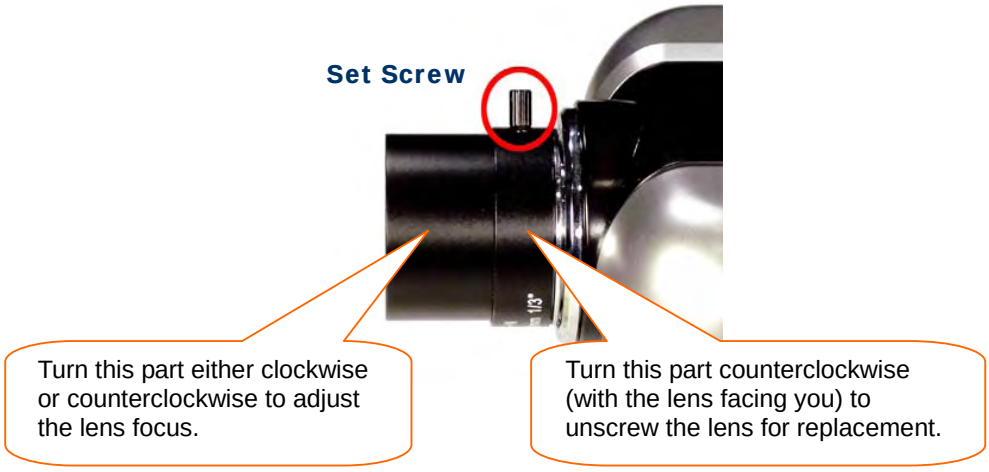
This option is only available when using Windows / MS Internet Explorer and ActiveX. Clicking this button opens a pop-up window showing the camera live image without any additional graphics.

The other options are identical to the MPEG4 camera models (see pages 21 – 23).

5: Adjusting the Camera Lens

5.1 Adjusting the Focus

To get the finest image, adjust the lens focus according to your environment. Before adjusting, turn the set screw counterclockwise, then turn the lens in either direction till you get the most well-defined image edges while viewing the picture quality on your Web browser. When you finish adjusting the lens, turn the set screw clockwise to fix it in place.


Set Screw
Turn this part either clockwise or counterclockwise to adjust the lens focus.
Turn this part counterclockwise (with the lens facing you) to unscrew the lens for replacement.

NOTE: Do not force the lens beyond either the clockwise or counterclockwise limit. Also, a good level of focus is normally achievable throughout several planes within the camera's focusing spectrum. Since optimum focusing is dependent upon the camera's field of view, it is important to scan the focusing plane from the closest to furthest perspectives before attempting any fine-tuning.

5.2 Replacing the Lens

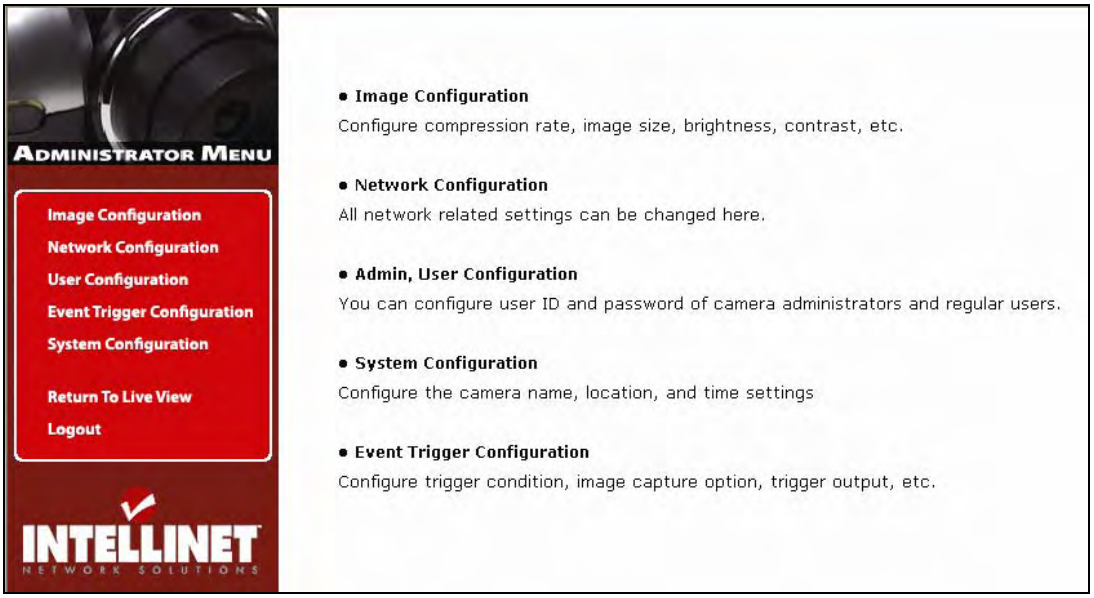
The Pro Series Network Camera is designed with a CS mount. The lens supplied with your product can be replaced with any standard C or CS lens, typically used within the surveillance industry. Follow the instructions below to replace the supplied lens with any C- or CS-type lens.

1. Unscrew the camera lens by turning the lens counterclockwise (see above).
2. For C lens only: Attach the new lens to a C-CS adapter.
3. Screw the new lens onto the camera. If applicable, adjust the iris according to the prevailing light conditions.
4. Focus the lens as instructed above.
5. Reload your Web browser and monitor the results from the product homepage.

NOTE: The Night Vision Infrared Camera is equipped with a special lens which cannot be replaced and must not be removed.

6: Administrator Menu

You can control the configurations of the camera using the administrator tools, which can be accessed only by an authorized user. If non-authorized users try gaining access, you may see a warning message "You are not an administrator."


ADMINISTRATOR MENU
Image Configuration
Network Configuration
User Configuration
Event Trigger Configuration
System Configuration
Return To Live View
Logout
INTELLINET
NETWORK SOLUTIONS
• Image Configuration
Configure compression rate, image size, brightness, contrast, etc.
• Network Configuration
All network related settings can be changed here.
• Admin, User Configuration
You can configure user ID and password of camera administrators and regular users.
• System Configuration
Configure the camera name, location, and time settings
• Event Trigger Configuration
Configure trigger condition, image capture option, trigger output, etc.

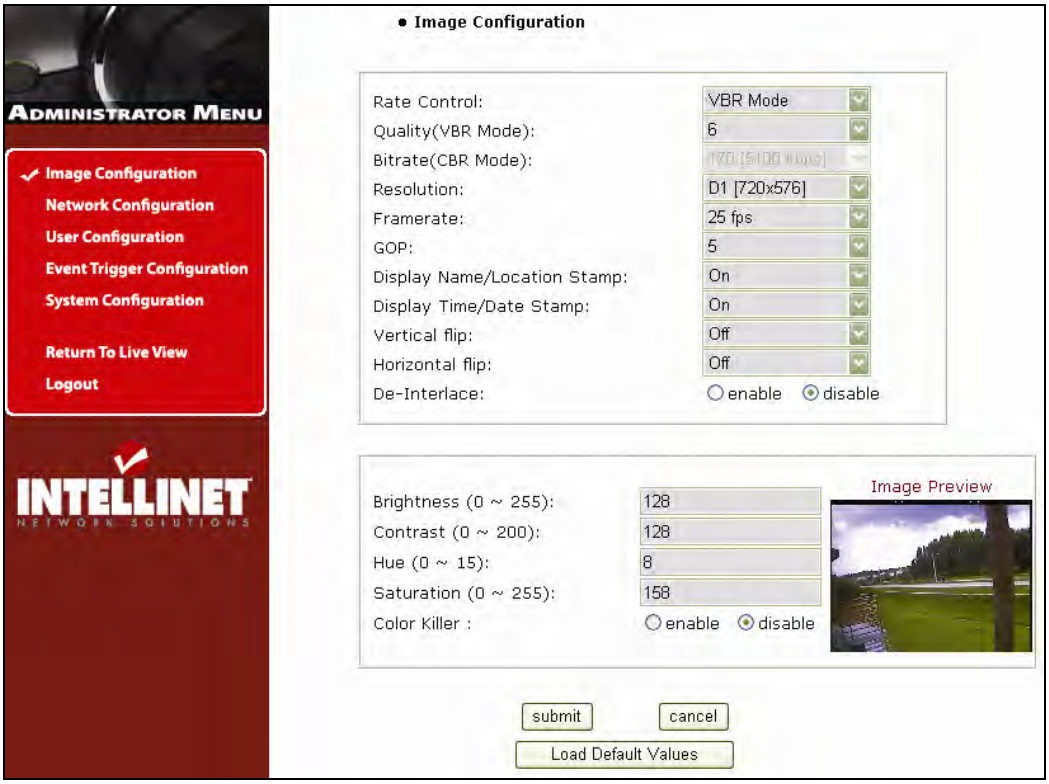
6.1 Overview of the Administration Menu

The table below provides a one-step overview of the Administrator Tools:

Image Configuration	To Configure compression rate, image size, brightness, contrast, etc.
Network Configuration	To configure camera IP, Web server port, image transfer port
User Configuration	To configure user ID and password
System Configuration	To configure the camera name, location and time settings
Event Trigger Configuration	To configure trigger condition, image capture option, trigger output, etc.
Wireless Configuration (wireless models only)	To configure wireless parameters such as wireless mode, SSID, encryption, etc.
Return to Live View	To go back to the monitoring page

NOTE: It is highly recommended that you change the administrator password for your camera as soon as possible to prevent unauthorized users from accessing the administrator menu. You can change the administrator password in the User Configuration.

6.2 Image Configuration
6.2.1 MPEG4 CCD Cameras, Dome Cameras and Network Video Server

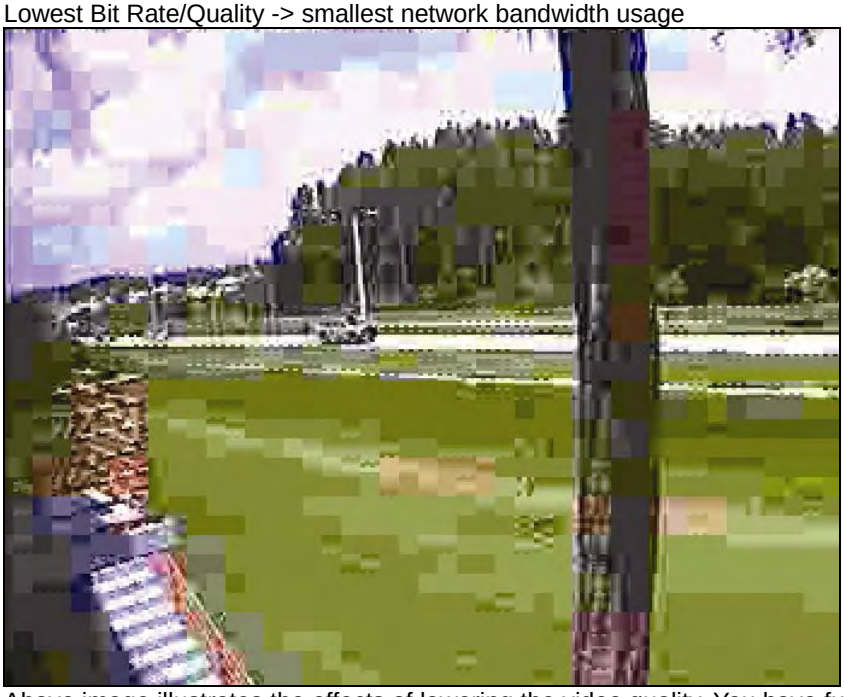


Rate Control
The bit rate used in video encoding has a direct impact on the video quality and the bandwidth used to stream video over the network. As opposed to constant bit rate (CBR), VBR files vary the amount of output data per time segment. VBR allows a higher bit rate (and therefore more storage space) to be allocated to the more complex segments of media files while less space is allocated to less complex segments. The advantages of VBR are that it produces a better quality-to-space ratio compared to a CBR file of the same size. The bits available are used more flexibly to encode the sound or video data more accurately, with fewer bits used in less demanding passages and more bits used in difficult-to-encode passages.
CBR is the best option, if you have to limit the bandwidth available to the camera; e.g., in order to save valuable bandwidth in busy networks.

Quality
This option is available when selecting the VBR rate control. Define the quality of the video output by assigning a value ranging from "1" = best quality to "31" = worst quality. Good values are 4 or 5, as they provide a good image quality at a relatively low network bandwidth usage.

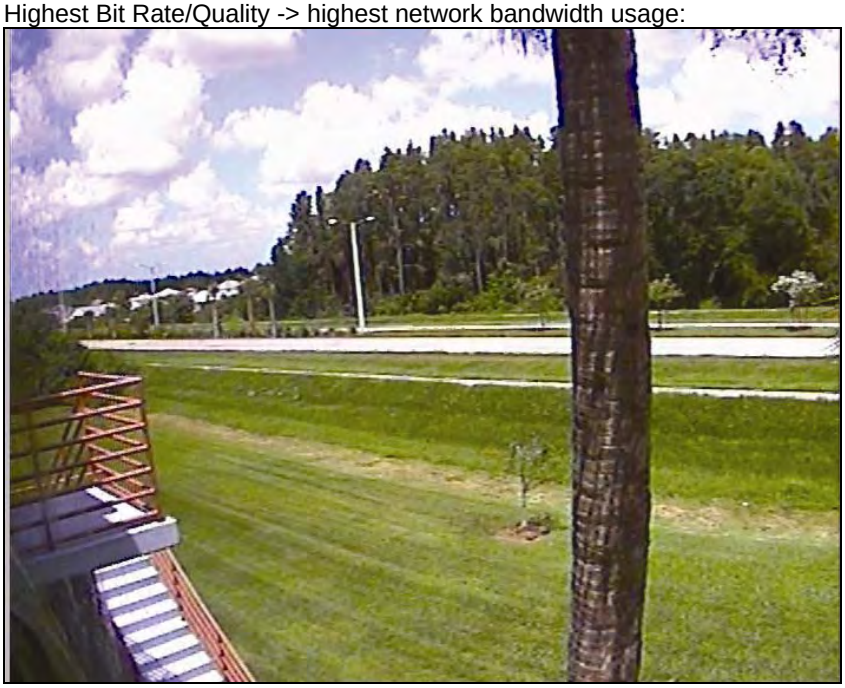
Bit Rate
Set the target bit rate of the encoding video. This option is available in CBR mode only. You can set the bit rate values from 30 kbps up to 9000 kbps at an interval of 300 kbps. A higher bit rate ensures higher quality of the live video at the expense of more network bandwidth usage. Controlling the maximum bit rate is good for controlling the bandwidth used by the MPEG4 video stream. As the bit rate is fixed, the frame rate and image quality can be affected adversely. The image quality can be reduced if complex image material requires more bandwidth than allowed by the bit rate settings.

Lowest Bit Rate/Quality -> smallest network bandwidth usage



Above image illustrates the effects of lowering the video quality. You have full control over the amount of bandwidth the camera can use, to the point where it becomes difficult to identify any objects in the image due to heavy compression damage.

Highest Bit Rate/Quality -> highest network bandwidth usage:



The effects of compression are minimal at the best image quality settings. The bandwidth usage of the camera at this setting can be up to 8 Mbps.

Resolution
Select the resolution for output video. Pro Series CCD Network Cameras support three types of image resolution. NTSC: D1 (720x480), VGA (640x480) and CIF (352x240); PAL: D1 (720x576), VGA (640x576) and CIF (352x288). The Digital PTZ CMOS camera supports 720x480, 640x480, 352x240 and 320x240 pixel image resolution.

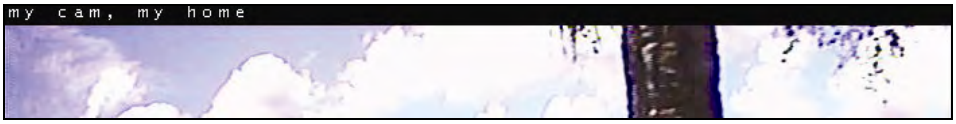
Frame Rate
Select the frame rate according to your preference. The higher value of frame rate ensures smoother video; but the higher the frame rate, the larger the network bandwidth usage.

GOP
Set the size of GOP (group of pictures). MPEG4 video stream consists of continuous GOP, and one GOP consists of one "I" frame plus "P" frames. This value equals the period of one "I" frame. The more the GOP size, the less network bandwidth will be occupied. Higher GOP values will save considerable network bandwidth, but at the expense of image quality. The default value is "5" and works fine for most applications.

Display Name/Location Stamp
Select "On" to display the camera name and location at the top of the transmitted images.

Display Time/Date Stamp
Select "On" to display the camera time and date at the top of the transmitted images.

Video without Name/Location Stamp and Time/Date Stamp

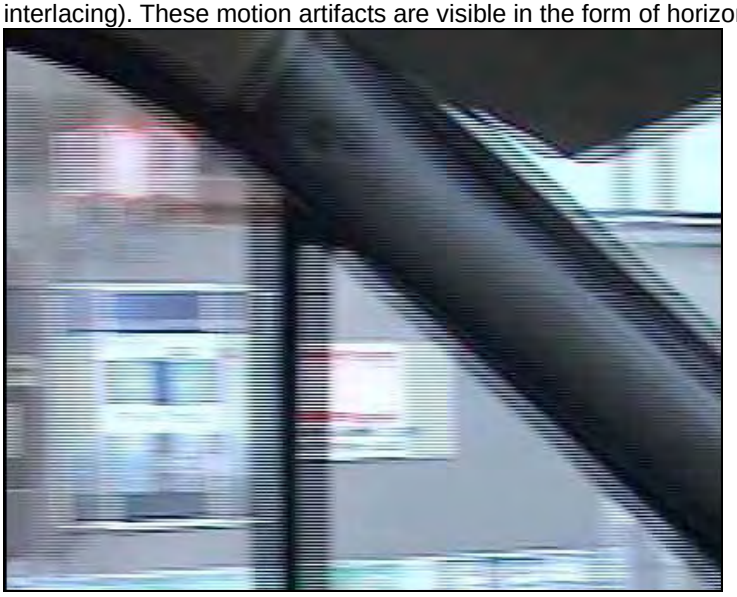


Video with Name/Location Stamp, but without Time/Date Stamp

Video with Name/Location Stamp and Time/Date Stamp

Vertical Flip and Horizontal Flip
Use these options in order to flip the video horizontally and/or vertically.
NOTE: These options only affect the live image shown in the Web browser, but not any video which the camera has uploaded to an FTP server or has sent out via e-mail.
For ceiling mount installation, use the top tripod mounting hole instead of the image flip option.

De-Interlace
Interlaced video is composed of two fields that are captured at different moments in time. When displayed on a typical computer screen, interlaced video frames will exhibit motion artifacts when both fields are combined and displayed at the same moment (today's computer screens are progressive scan monitors which display the image line by line from top to bottom without interlacing). These motion artifacts are visible in the form of horizontal lines. See below:



De-interlacing reduces the effects of interlacing through methods of interpolation. See below:

NOTE: De-interlacing is only active for ActiveX / MS Internet Explorer. Java does not support it.

Brightness
Set the image brightness. A higher number equates to brighter video (input 0 to 255).

Contrast
Set the image contrast in the range of 0 to 200.

Hue
Most sources of visible light contain energy over a band of wavelengths. Hue is the wavelength within the visible-light spectrum at which the energy output from a source is greatest. Normally there is no need to change the default value (8), but if you wish to experiment with different hue values to achieve different effects, the camera offers 15 values to choose from.

Examples of different Hue Values (from left to right: 0, 4, 8, 10). Actual results may vary, depending on the camera model.

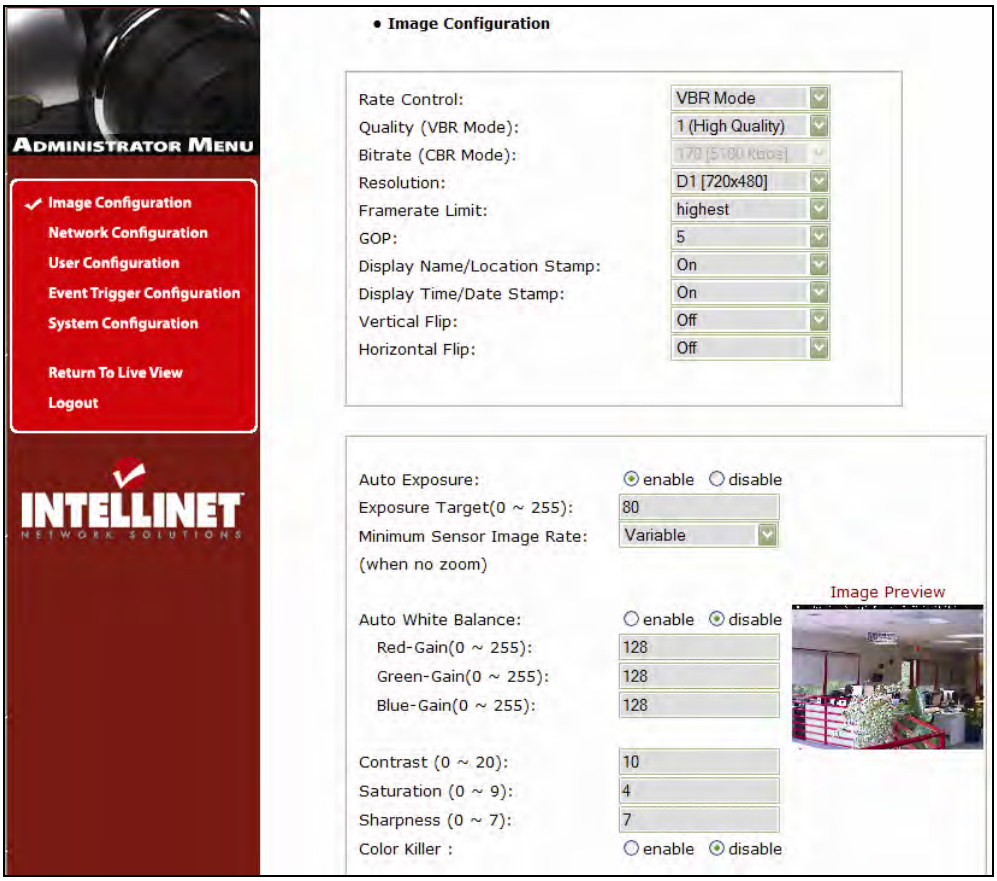
Saturation
Set the saturation value of images. Higher saturation values generate deeper colors (input values ranging from 0 to 255).

Examples of different Saturation Values (from left to right: 0, 128, 255). Actual results may vary, depending on the camera model.

Color Killer
Enabling this will switch the image into gray (monochrome) format. Disabling this option sets the images at their original color.

Load Default Values
Set the image configuration as default values.

6.2.2 MPEG4 CMOS Cameras



The basic options are the same, except for the ones mentioned below:

Auto Exposure
Enable or disable the Auto Exposure. The exposure target can be used to define the brightness of the image. 128 is the default value. The higher the value, the brighter the image.

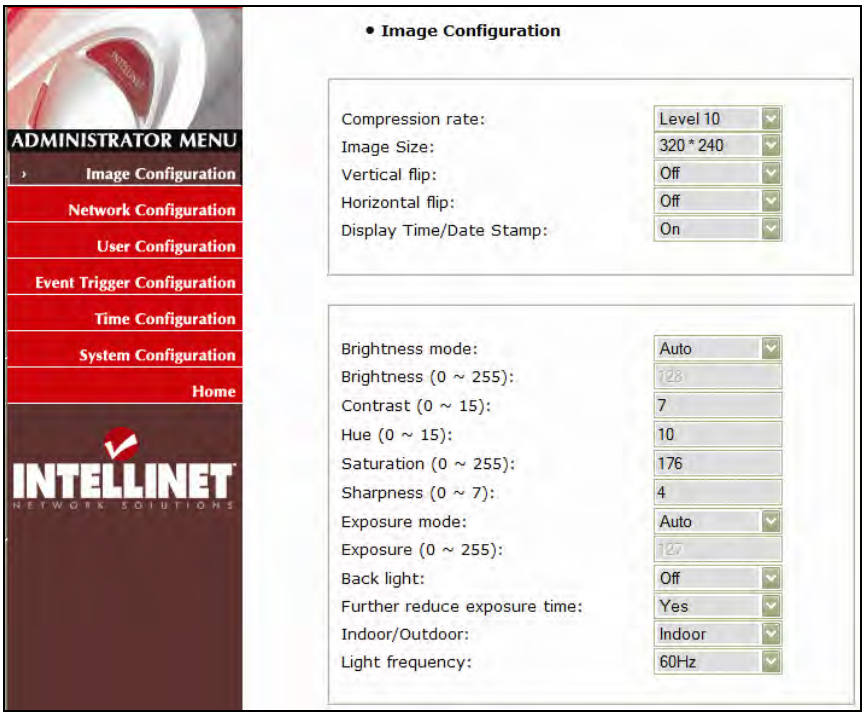
Minimum Image Sensor Rate
Here you can define the minimum frame rate of the image sensor. "Variable" is the default value and best suited for most applications as it adjusts the frame rate according to the available light levels while providing the best possible image quality.

Auto White Balance
Enable or disable Auto White Balance. If set to "disable," you can manually control the amount of red, green and blue color in the input fields below.

Saturation
Set the saturation value of images. Higher saturation values generate deeper colors (input values ranging from 0 to 9).

Sharpness
This value lets you control the sharpness of the image. Lower values generate a smoother image; higher values generate a crisper image.

6.2.3 JPEG CMOS Camera 550710



Compression Rate
You can set the image compression rate here. A value of "10" equals the best possible compression. Value "1" offers the best image quality. It is recommended to use compression values of 8 – 10 for best results.

Image Size
Select the resolution for output video. The Pro Series Network Camera 550710 supports three types of image resolution: 160 x 120 pixel, 320 x 240 pixel and 640 x 480 pixel.

Vertical Flip and Horizontal Flip
Use these options in order to flip the video horizontally and/or vertically.
NOTE: These options only affect the live image shown in the Web browser, but not any images which the camera uploads to an FTP server or sends out via e-mail.

Display Time/Date Stamp
Select "On" to display the camera time and date at the top of the transmitted images.

Brightness Mode
There are two modes to choose from: "Auto" and "Manual." When set to "Auto," the camera will automatically adjust to changing light conditions. In manual mode, however, you can control the brightness value by entering values from 0 to 255 in the field below.

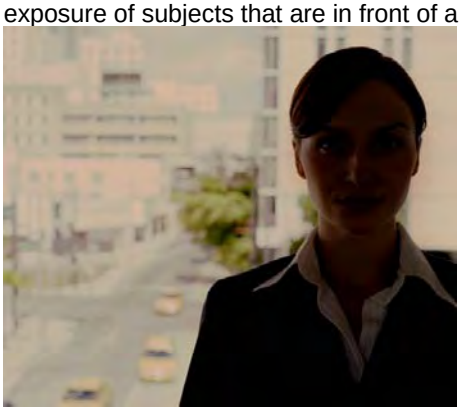
Contrast
Set the image contrast. The higher the number, the stronger the contrast (input 0 to 15).

Saturation
Set the saturation value of images. Higher saturation values generate deeper colors (input values ranging from 0 to 255). A good value is typically less than 200 and more than 120.

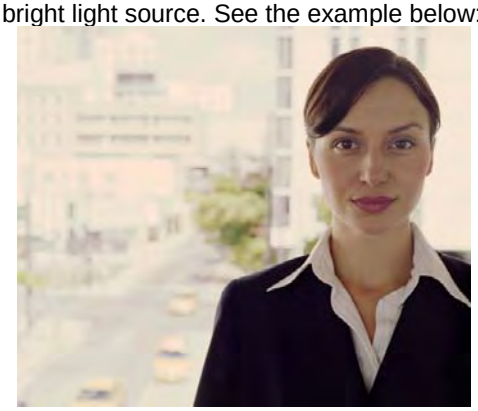
Sharpness
This value lets you control the sharpness of the image. Lower values generate a smoother image; higher values generate a crisper image. Values of "4" and "5" give you good results in general.

Exposure Mode
This controls the exposure mode of the camera. The exposure mode has a very direct impact on the brightness of the image. It is recommended to leave this value set to "Auto."
When you activate the manual mode, you need to specify the exposure mode value in the Exposure field.

Back Light
Backlight compensation (BLC) is video gain done either manually or automatically to correct the exposure of subjects that are in front of a bright light source. See the example below:



BLC = off



BLC = on

Further Reduce Exposure Time
When enabled, this option reduces the maximum exposure time from 1/20 sec. to 1/100 sec. Under normal daylight conditions, this option should be enabled.

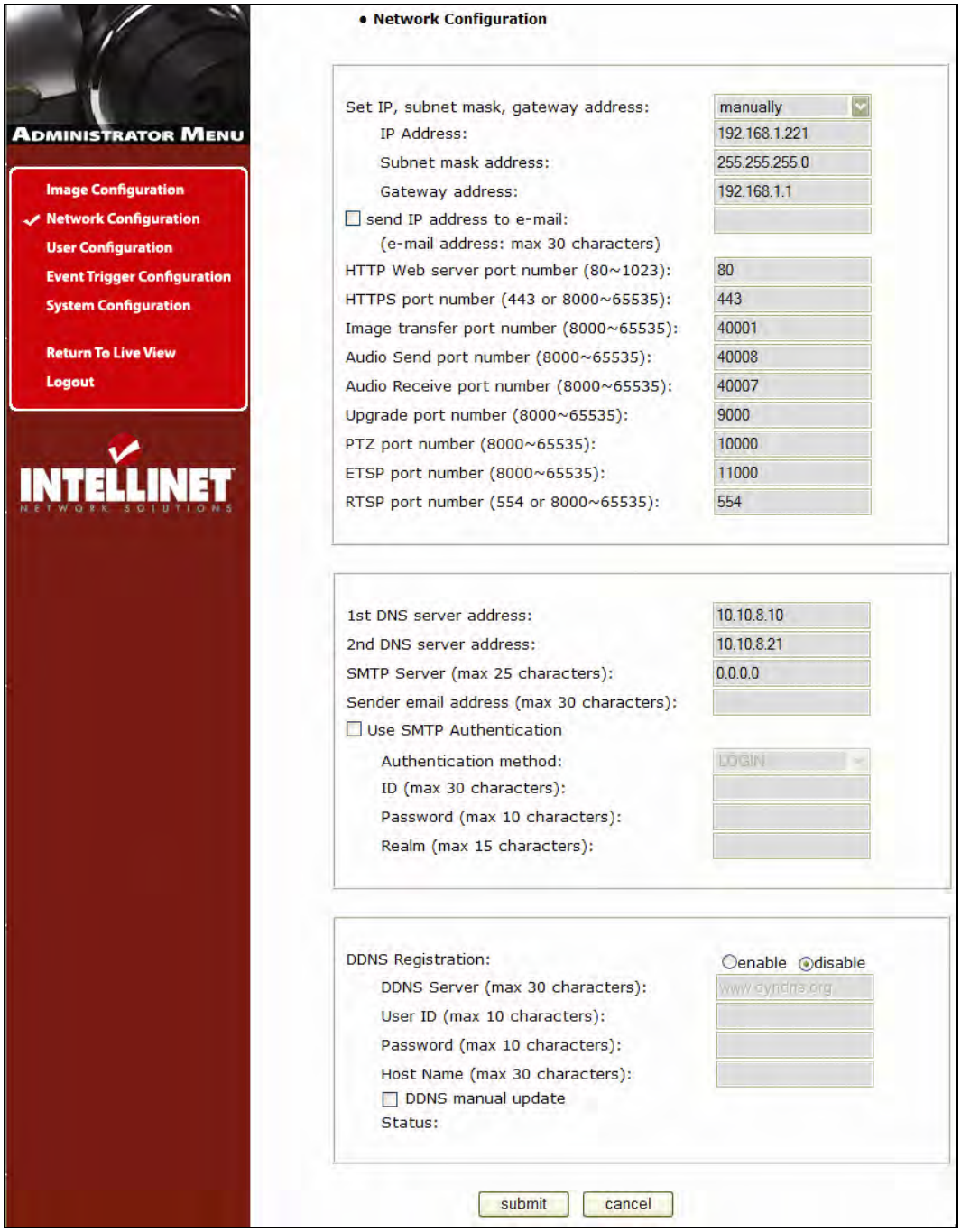
Indoor / Outdoor
This setting adjusts a variety of image parameters to optimize the settings for either indoor or outdoor use. To determine which setting to choose, consider what the camera views, not where it's located. For example: A camera mounted indoors looking out of a window should be set to the "outdoor" value.

Light Frequency
There are two values to choose from here, and both values are important only if the camera captures artificial (electronic) light. If the camera is installed outside, or points outside and only captures natural sunlight, this value is irrelevant. In all other installations, this value should be set in accordance with the power grid frequency in your country.
If you live in a country which uses PAL, you will need to select 50 Hz.
If you live in a country which uses NTSC, you will need to select 60 Hz.
Refer to Page 4.
Failing to set the light frequency to a correct value can lead to an unwanted negative image quality, though it does not cause any harm to the camera.

6.3 Network Configuration

6.3.1 MPEG4 Cameras, Dome Cameras and Network Video Server

This screen defines the network type and addresses of the camera. Here you can configure the camera's IP address, the DNS server address and the SMTP server IP address.



Set IP address, Subnet Mask, Gateway Address
To set the IP address, subnet mask and gateway address manually, select "manually" in the combo box. If you have any trouble configuring network system information, contact your network administrator. Knowledge about IP addresses and TCP/IP is required for the configuration task.

Set DHCP
When selecting "using DHCP," the IP address, subnet mask address and gateway address are being obtained from a DHCP server. Users in a local network area may check the IP address through IP Installer.
NOTE: If you select "DHCP," you may see the rebooting message "Now the Network Camera is rebooting to apply the changes..." on the Web browser. After completion of the reboot, the Status LED blinks once per second. (Confirm that the Operating Status LED blinks after selecting "DHCP" and the rebooting process to ensure your new setting took effect.)
To select DHCP, you must have a DHCP server in the network. Otherwise, the IP address will be rebooted automatically as the previous IP address. It can take about 4 minutes for booting. After rebooting, re-enter the previous IP address. You may see the fail message from the "Network Configuration" page.

Send an IP address to Email
To send camera system information (camera name, camera location, DHCP IP address), click on a text box and enter your e-mail address. (You should configure your SMTP server information first.)

Web Server Port Number
To set the port number for the Web server. (The default port number is "80"; users can select from 80 to 1023.)

HTTPS Port Number
The camera's SSL encryption uses port 443 by default. You can adjust the value.

Image Transfer Port Number
To set the port number for the video/image transfer. (The default port number is "40001"; users can select from 8000 to 65535.)

Audio Send Port Number
To set the port number for the audio transfer to the connected camera client. (The default port number is "40008" and users can select from 8000 to 65535.)

Audio Receive Port Number
Set the port number for the receiving audio from a connected camera client. (The default port number is "40007"; users can select from 8000 to 65535.)

Upgrade Port Number
To set the port number for upgrading firmware. (The default port number is "9000"; users can select from 8000 to 65535.)

PTZ Port Number
NOTE: PTZ control is not available on these Pro Series Network Camera models.

ETSP Port Number
To set the port number for ETSP (Event Trigger Setting Saving Program). The default is "11000"; users can select from 8000 to 65535. Refer to section 9 for instructions on the ETSP client.

RTSP Port Number
RTSP stands for Realtime Streaming Protocol and allows RTSP enabled video playback clients such as VLC Media Player or MPlayer to play back the live video from the network camera. For more information refer to section "RTSP Video Playback". We recommend using the default value " 554".

1st, 2nd DNS Server Address
To map between an IP address and domain name, you should enter your DNS server address. If a user sets the DNS server into the camera, users can configure the SMTP server, FTP server and NTP server with its domain name.
NOTE: A DNS (domain name system) is for mapping between an IP address and domain name. Every network device in the world has its IP address for connecting to the Internet. And the device is to be connected not with its domain name but with its IP address. Ordinary users may not be familiar with IP addresses, but know the domain names. If a user accesses a certain network device with its domain name, the DNS server translates the domain name into an IP address of the device and replies to the user with the result.
SMTP Server
Enter the SMTP server IP address or hostname here to send camera system information by e-mail. You should configure this first to get camera system information by e-mail.

Use SMTP Authentication
If you need user authentication for using the SMTP server, check the box and enter your ID, password and realm for your SMTP server. (The camera's SMTP authentication is supporting the "LOGIN" method.)
- Authentication method: Choose the SMTP authentication method.
- ID: Enter the user ID for SMTP authentication.
- Password: Enter the user password for SMTP authentication.
- Realm: Enter the realm for SMTP authentication.

DDNS Registration
To register the camera to the DDNS (dynamic domain name system) server, check the "enable" box. A dynamic IP address complicates remote access since you may not know what your current WAN IP address is when you want to access your network over the Internet. The solution to the dynamic IP address problem comes in the form of a dynamic DNS server.

ID, Password
Enter the ID and password to find the registered camera on the DDNS server.

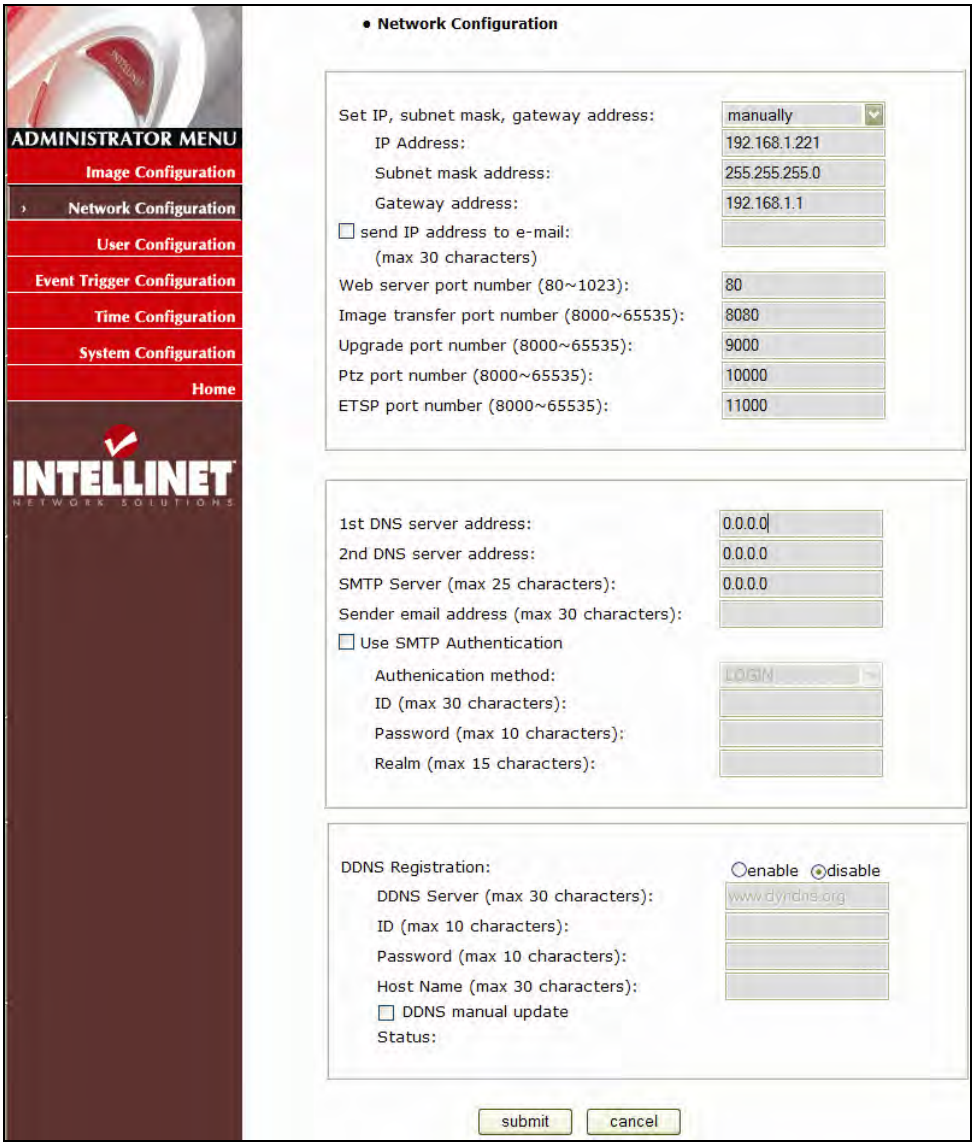
Hostname
Enter the hostname to find the registered camera on the DDNS server.
***NOTE*:** Enter a full domain name (such as "mynetworkcam.dyndns.org").

DDNS Manual Update
You can update the DDNS server manually. ***CAUTION:*** Repeated use of the function may lead to the blocking of your DDNS domain name.

Status
To show the status of successful access to the DDNS server.

Submit
Save the information.

6.3.2 JPEG CMOS Camera 550710

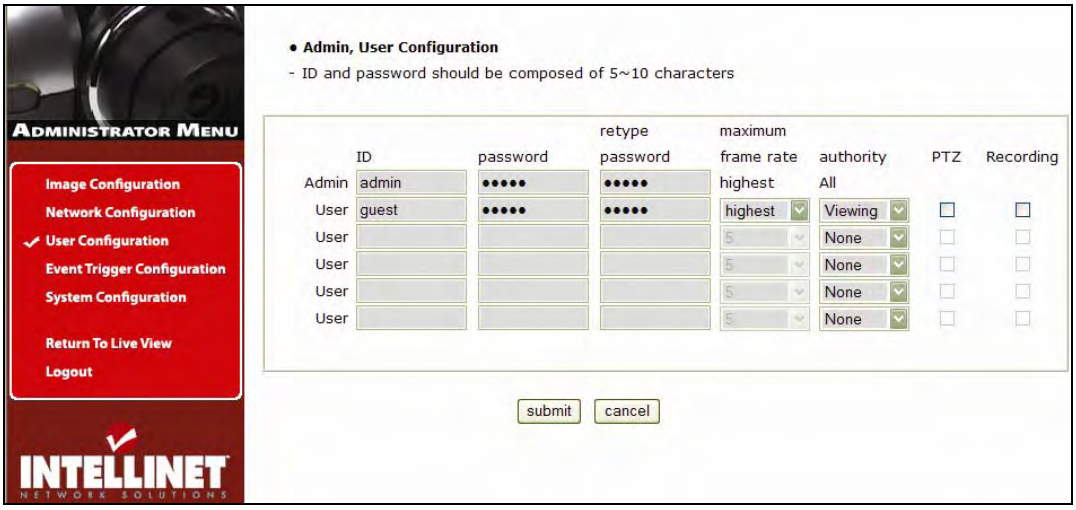


The network settings for the camera model 550710 are virtually identical to those of the MPEG4 models. Since the 550710 camera does not support Audio, the audio-related port settings are not shown.

6.4 User Configuration

6.4.1. MPEG4 Cameras, Dome Cameras and Network Video Server

This screen is used to define and configure user accounts for camera access.



ID
User Name must be between 5 and 10 characters.

Password
Password must be between 5 and 10 characters.

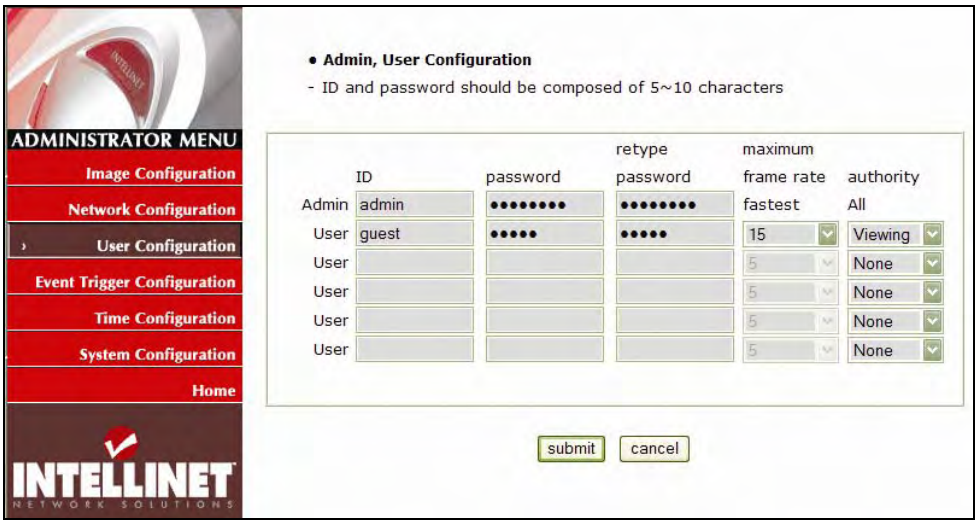
Maximum Frame Rate
You can define the maximum frame rate this user is allowed to receive. This function can be useful if you allow public access to your camera; e.g., you may have the camera live image integrated into an HTML page on your Web site, but want to keep the users from consuming all of the available bandwidth. Reducing the maximum frame rate allows you to do that.
Example:
The frame rate in the image configuration is set up as 25.
The maximum frame rate for the guest user account is set to 1.
The maximum frame rate for a second user account (e.g., admin) is set to fastest.
If the admin user accesses the camera, the frame rate shown in the Web browser is 25, but the guest user only views the video at 1 fps (frame per second).

Authority
None – no access to the camera is possible.
Viewing – access to the live image, but no access to the administrator menu.
All – access to the live image and access to the administrator menu.

PTZ (Only Digital PTZ Camera models)
Activate this option if you wish to grant the user authority to use the Pan-Tilt-Zoom control on the camera live video page.

Recording
Allow or restrict the ability to record video from the camera live video page. Leave this option unchecked if you do not want the user to record any video.

6.4.2. JPEG CMOS Camera 550710



ID
User Name must be between 5 and 10 characters.

Password
Password must be between 5 and 10 characters.

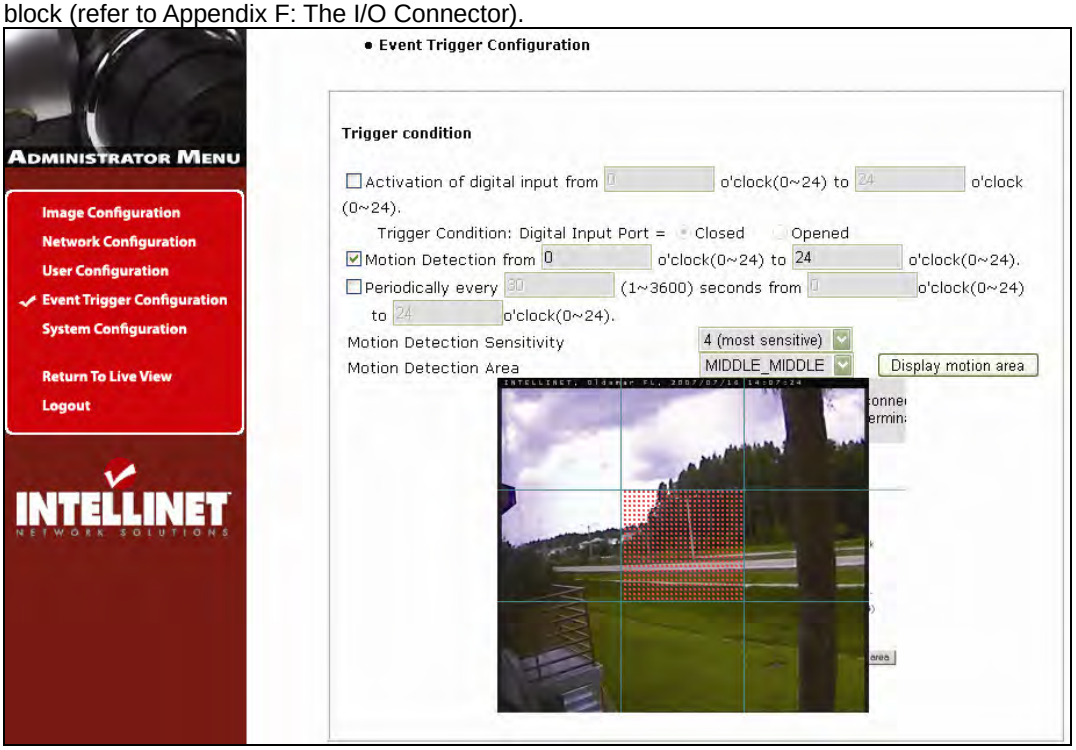
Maximum Frame Rate
You can define the maximum frame rate this user is allowed to receive. This function can be useful if you allow public access to your camera; e.g., you may have the camera live image integrated into an HTML page on your Web site, but want to keep the users from consuming all of the available bandwidth. Reducing the maximum frame rate allows you to do that.
Example:
The frame rate in the image configuration is set up as 25.
The maximum frame rate for the guest user account is set to 1.
The maximum frame rate for a second user account (e.g., admin) is set to fastest.
If the admin user accesses the camera, the frame rate shown in the Web browser is 25, but the guest user only views the video at 1 fps (frame per second).

Authority
None – no access to the camera is possible.
Viewing – access to the live image, but no access to the administrator menu.
All – access to the live image and access to the administrator menu.

6.5 Event Trigger Configuration

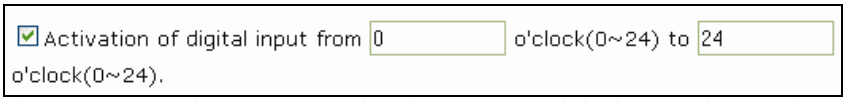
6.5.1 MPEG4 Cameras, Dome Cameras and Network Video Server

This screen is used to receive captured video through e-mail or an FTP. You may also connect external devices, such as an infrared sensor or alarm sensor, to use with the provided terminal block (refer to Appendix F: The I/O Connector).

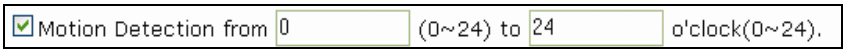


Trigger Condition

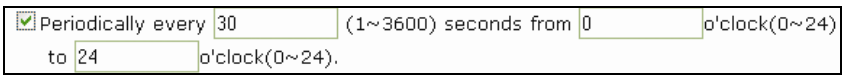
This is to select options for sending an event signal to the camera.



The camera receives an event signal from external devices such as an infrared sensor. You can define the time (international 24h time format) in which the camera "listens" for incoming signals.



Activate the camera's internal motion detection using this option. The camera does a real-time frame-by-frame comparison of the image material and can trigger an alert if it detects motion. The camera does not have an IR motion detection sensor. It relies on a frame-by-frame comparison, and, therefore, the internal motion detection cannot be used at night when no light is present.

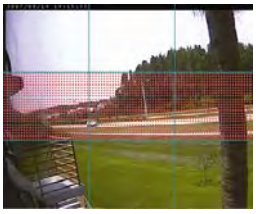


This activates a timer-based event. Values from 1 to 3600 seconds are valid. You can define the time (international 24h time format) in which the camera's timer is active to trigger an output event.

Motion Detection Sensitivity:
This is to configure the level of motion detection sensitivity. The level is composed of five levels, from 0 to 4. Value 0 is the least sensitive setting. At this setting, the camera may "overlook" a lot of motion. Value 4 is the most sensitive setting. At this setting, the camera will likely cause a lot of false alarms because the tiniest movement – even the video compression – which can create compression artifacts, can trigger an alert. Values 1 - 3 are more suited for real-life applications. Experiment with the different settings to find the right level of sensitivity for your application.

Motion Detection Area:
This is to configure the motion detection area in the images. If you select "Motion Detection Area" type in the combo box and click "Display motion area," then you can see your setting of "Motion Detection Area" graphically as shown in the figures below.

Top

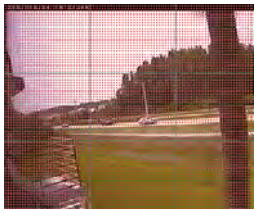

Middle

Bottom

Left

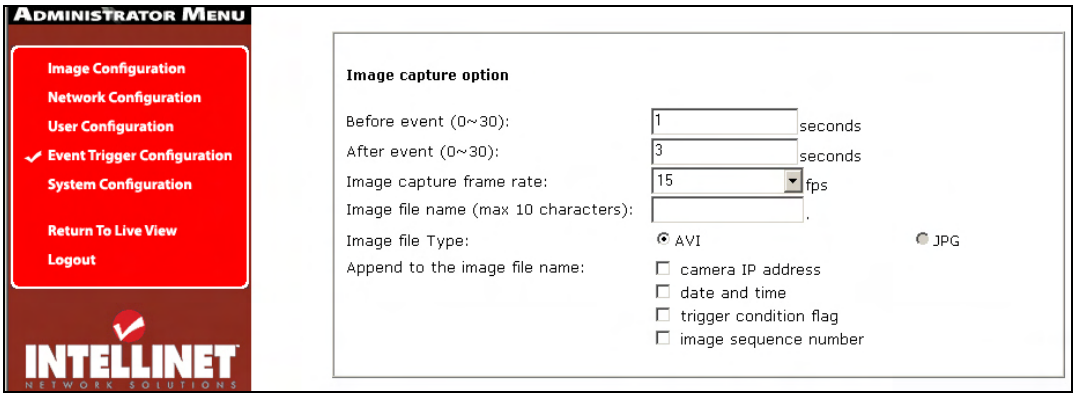
Right

Middle_Middle


All Set

CAUTION: It is not recommended that the motion detection function be used for security purposes. To perform security surveillance for the protection of high-value goods, it is suggested that infrared sensors or other insurance-approved sensors be used (and connected to the camera to make use of the event output options).
It should also be mentioned that the motion detection delivers better results at lower image resolutions.

Image Capture Option
This is to configure image capture options when an event is triggered. When an event occurs, you can get the pre-event and post-event images by setting "Before event" and "After event."



Before event:
You may set the starting time to capture an image before the event is triggered. (Input limitation is from 0 to 30 seconds.)

After event:
You may set the finishing time to capture an image after the event is triggered. (Input limitation is from 0 to 30 seconds.)

Image capture frame rate:
Set from 1 to 15 fps when an image is being captured.

Image file name:
You may designate the image file name to send e-mail or FPT after an image is captured. All captured images are saved as .avi files (for example: Filename.avi).

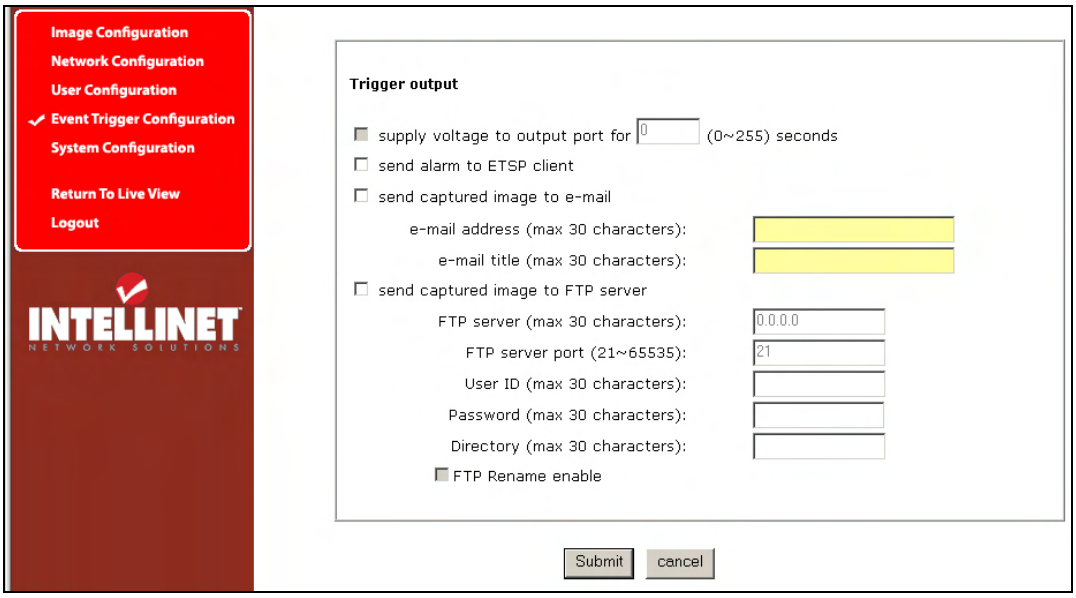
Image file type:
You can choose between two options. AVI means that the camera transmits a video file. JPG means that the camera transmits a series of single JPEG images.

Append to the image file name:
You may add information to the image file name.
- Camera IP address (example: filename_192.168.1.19.avi).
- Date and time (example: filename_20020218150030.avi).
- Trigger condition flag: When selecting "Activation of digital input port," "D" may be added to the image file name (example: filename_D.avi); when selecting "Periodically every…," "P" is added to image file name (example: filename_P.avi).
- Image sequence number: With this option, you may classify a file with the same name with consecutive numbers from 000 to 999 (example: When you designate file name as "camera" and select "Image sequence number," the file name appears as camera001.avi," "camera002.avi" and so on through "camera999.avi").

Image Capture option limitation

The configuration for the image capture option affects memory capacity. If the configuration uses excessive memory, the warning message “Not enough memory…" will display. The total image capture frame rate must be no more than 120 fps due to memory size.
(Before event time + After event time) x (Image capture frame rate) must be under 120.
For example, if “Before event time" is 3 seconds, “After event time" is 2 seconds and “Image capture frame" is 3 fps, the total image capture frame rate is (3 + 2) x 3 = 15 fps.
If a warning message appears, reduce the value of the option.

Trigger Output
This is to configure digital output states and control script. The Pro Series Network Camera sends captured images via e-mail or an FTP server when connected external sensors detect events.



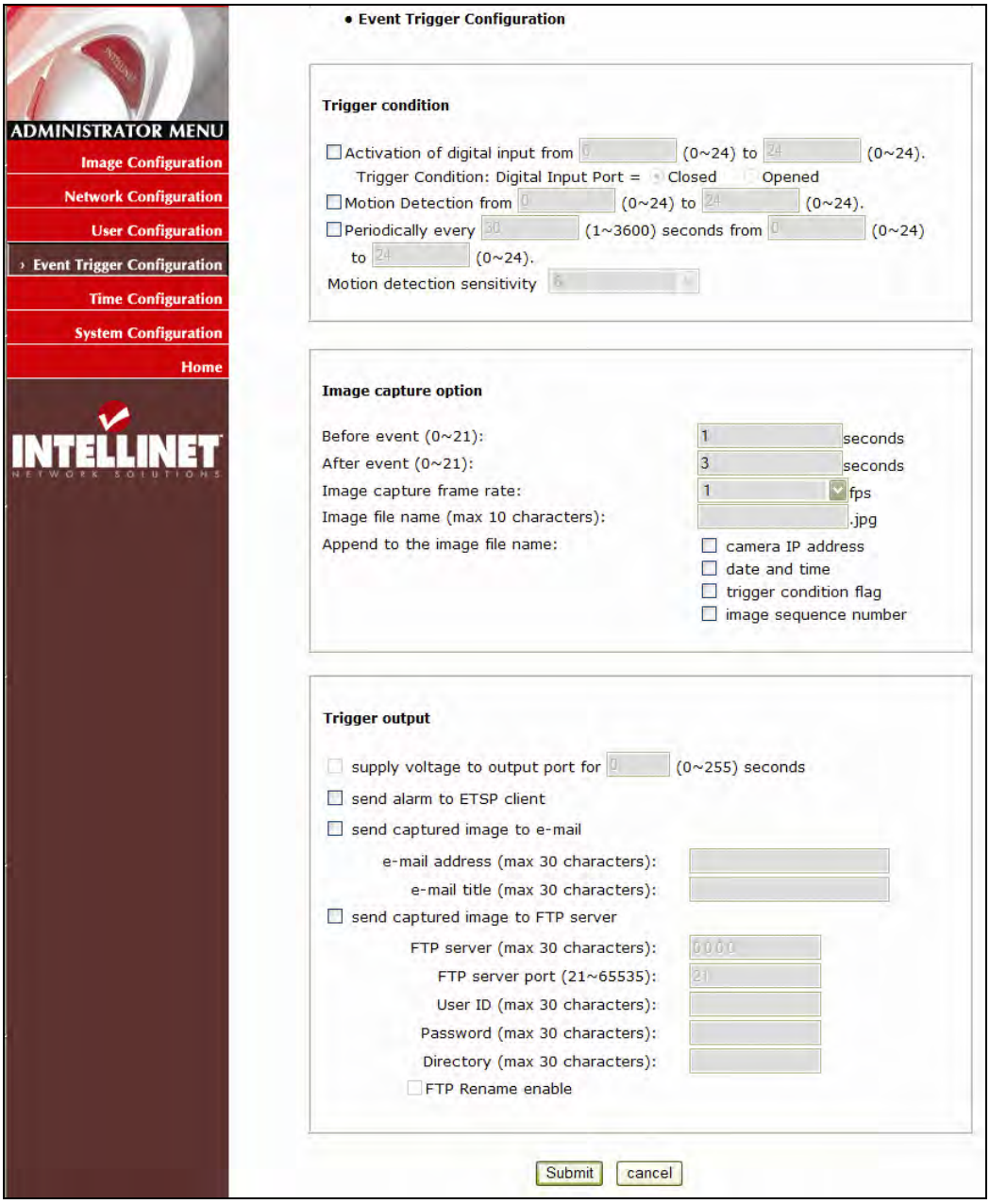
Supply voltage to output port for xxx seconds.
This is to supply voltage to the output port when events are triggered. (This option is only activated when you select the "Activation of digital output" option in the "Trigger Condition" section.) During the activation period, which you can specify in seconds, the camera provides power to the GPIO connector in pins 3 and 4 – see Appendix F.

Send alarm to ETSP client:
By checking the box, an alarm will be sent to the ETSP client when the events are triggered. Refer to Section 9 for instructions on the ETSP client.

Send captured image to e-mail:
This is to designate a person to receive captured images via e-mail through the SMTP server. You may configure the SMTP server and e-mail address as desired.

Send captured image to FTP server:
This is to send captured video from the camera when an event is triggered. Enter an FTP server IP address, user ID and password, and select a directory to save video.

6.5.2 JPEG CMOS Camera 550710


ADMINISTRATOR MENU
Image Configuration
Network Configuration
User Configuration
Event Trigger Configuration
Time Configuration
System Configuration
Home
INTELLINET
NETWORK SOLUTIONS
• Event Trigger Configuration
Trigger condition
Activation of digital input from 0 (0~24) to 24 (0~24).
Trigger Condition: Digital Input Port = Closed Opened
Motion Detection from 0 (0~24) to 24 (0~24).
Periodically every 30 (1~3600) seconds from 0 (0~24)
to 24 (0~24).
Motion detection sensitivity 6
Image capture option
Before event (0~21): 1 seconds
After event (0~21): 3 seconds
Image capture frame rate: 1 fps
Image file name (max 10 characters): .jpg
Append to the image file name:
camera IP address
date and time
trigger condition flag
image sequence number
Trigger output
supply voltage to output port for 0 (0~255) seconds
send alarm to ETSP client
send captured image to e-mail
e-mail address (max 30 characters):
e-mail title (max 30 characters):
send captured image to FTP server
FTP server (max 30 characters): 0.0.0.0
FTP server port (21~65535): 21
User ID (max 30 characters):
Password (max 30 characters):
Directory (max 30 characters):
FTP Rename enable
Submit
cancel

The Event Trigger Configuration of the camera model 550710 is very similar to the MPEG4 models. There are two main differences here:

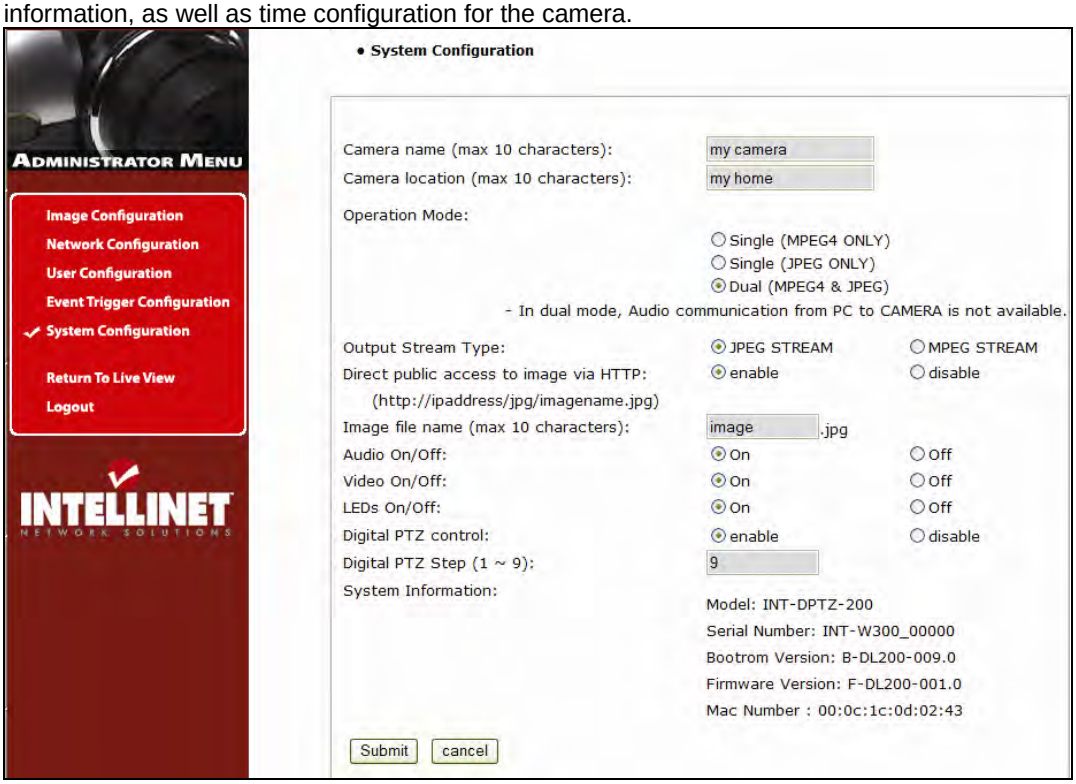
a) No Motion Detection Area
You cannot define the motion detection area. If you enable motion detection, the entire image area is being monitored.

b) No upload of AVI video files
This camera model only supports the upload of JPEG images.

6.6 System Configuration

6.6.1 MPEG4 Cameras, Dome Cameras and Network Video Server

This screen is used to configure camera name, location, operation mode and system information, as well as time configuration for the camera.



Camera Name
Define the camera name, maximum of 10 characters.

Camera Location
Define the camera location, maximum of 10 characters.

Operation Mode and Output Stream Type
There are three operation modes for the camera: Single (MPEG4 Only), Single (JPEG Only) and Dual (MPEG4+JPEG). In Dual mode, the camera can encode and transmit both MPEG4 and JPEG images simultaneously over the network, whereas in Single mode only MPEG4 or JPEG video will be encoded and transmitted. In Dual (MPEG4+JPEG) mode only, the Output Stream Type is selectable between JPEG stream and MPEG4 stream. The stream type defines which type of data is sent to users connecting via a Web browser. Also in Dual mode, audio communication from PC to camera is not available, whereas in Single mode (which uses MPEG4 only) bi-directional audio communication is available.

Direct Public Access to Image via HTTP
The purpose of this function is to allow your video surveillance program to access the camera image even if the software offers no support for MPEG4 cameras.
JPEG images are only transmitted in Dual (MPEG4+JPEG) and Single (JPEG Only) mode and are accessible through http://camera IP (URL)/jpg/imagename.jpg. In Single (MPEG4) mode, this function is not activated. When "enabled" is selected, anyone can access the camera image without entering a username or password (example: http://192.168.1.221/jpg/image.jpg).
When "disable" is selected in order to view the image, a username and password must be given (example: http://guest:guest@192.168.1.221/jpg/image.jpg).

Image File Name
This option is used to for accessing the JPEG images with ".jpg" extensions. The file name should be less than or equal to 10 characters.

Audio On/Off
Activate or deactivate the camera's audio function. This option can be important in situations in which, by law, you are not allowed to do video surveillance that includes audio and you are required to install a camera without audio support.

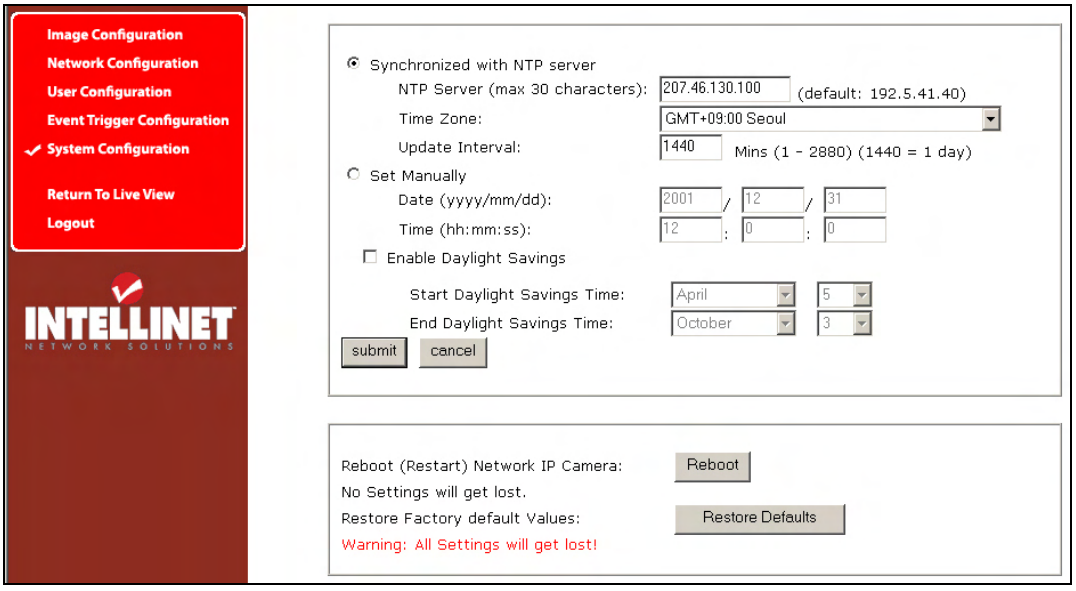
Video On/Off
This option is used to stop sending video temporarily from your camera over the Internet or network; thus, when you click "Off," your network camera no longer sends video. (Factory default is Video "On.")

LED On/Off
In LED "On" mode, LEDs on your camera operate as described in LED Section 2.2 on Page 7. When you activate LED "Off" mode, then all LEDs are turned off as if your camera were inactive, but the camera is still sending video and audio over the network or Internet. This function can be useful if you want to trick a suspected thief into believing that the camera is turned off while, in fact, you are recording all of his/her actions.

Digital PTZ control (only certain models)
Enable or disable the Digital PTZ control option on the camera homepage. This option is only available for the MPEG4 CMOS cameras models 550482 and 550468.

Digital PTZ Step (1 ~ 9): (only certain models)
You can define PTZ step size here.
Value 9: 12 steps between maximum zoom out and maximum zoom in.
Value 1: 120 teps between maximum zoom out and maximum zoom in.
This option is only available for the MPEG4 CMOS cameras models 550482 and 550468.

System Information
This is to check system information for the camera. You may see the model name, serial number, MAC number, BootRom and Firmware version (see Appendix E: Updating Firmware).



Synchronized with NTP Server
The camera automatically configures the date and time through the NTP (network time protocol) server. The NTP server is based on Greenwich time. Select the NTP server, IP address and time zone to set the date and time automatically, then click "submit." ***NOTE:*** If this procedure doesn't work, it could be due to a network error. Select another NTP server and IP address or set the date and time manually. Once the date and time configuration is set, you don't have to configure it again.

- NTP Server: The standard public or private NTP server IP address.
- Time Zone: Select the appropriate time zone as per the camera location.
- Update Interval: The update time interval for updating/synchronizing the camera time with the NTP server.

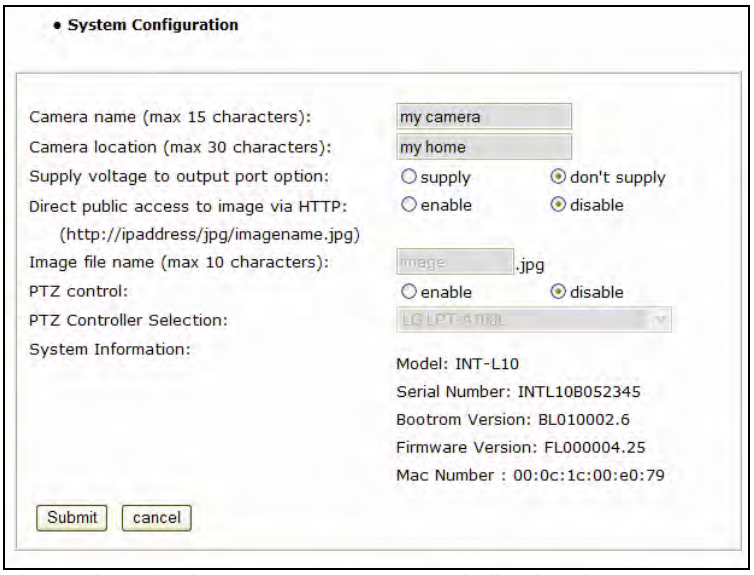
Set Manually
Enter the date and time manually, then click "submit."

Enable Daylight Saving
Enter the dates you want to start/end Daylight Saving Time.

Reboot (Restart) Network Camera
This option will reboot or restart the camera. Your settings will not be lost.

Restore Factory Default Values
This option will restore the default factory values.

6.6.2 JPEG CMOS Camera 550710



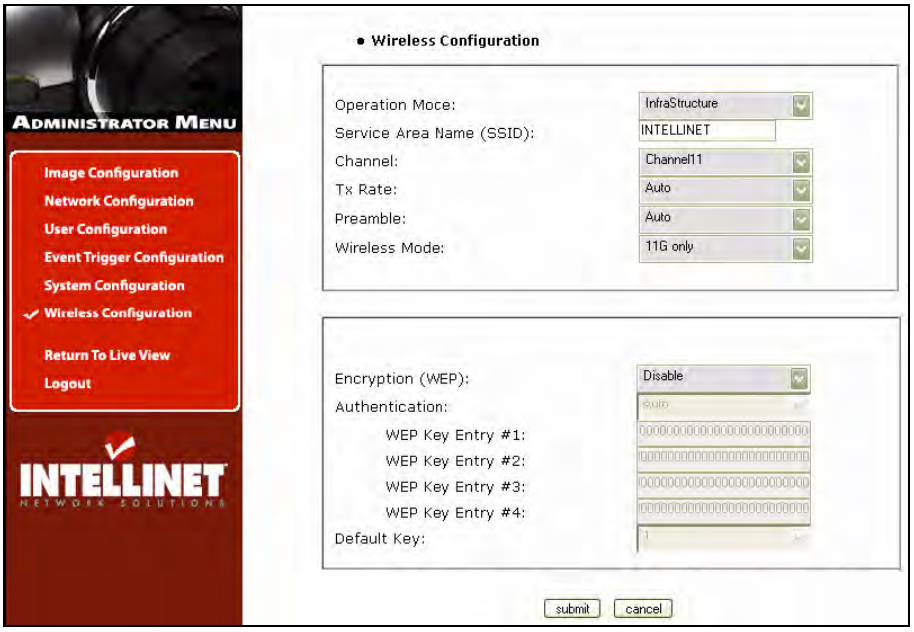
The settings for the 550710 camera are similar, but there are a few differences.
a) No selection of streaming mode: The 550710 camera only supports JPG streaming.

b) No Audio/Video/LED on/off: The 550710 camera does not support these features.

c) No time server configuration: The 550710 camera's time settings are defined on a separate page. Click on Time Configuration on the left side of the admin menu to bring up the configuration page. The configuration is identical to that of the MPEG4 models, which is described on the previous page.

6.7 Wireless Configuration (for wireless cameras only)

This screen is used to configure wireless settings to match your access point for a wireless network connection.



6.7.1 Wireless Setup

1. Select the operation mode to determine the type of wireless communication for the Pro Series Wireless Network Camera: Infrastructure or Ad hoc. The default setting is Infrastructure.
2. Set the service area name (SSID) in accordance with the access point settings to which the camera should connect.
3. The channel is set to a default. In the infrastructure mode, the camera will automatically find the access point. The channel only needs to be set in Ad-hoc mode.
4. The default setting for the "Tx rate" is Auto; however, it can be set up to 54 Mbps in 802.11g mode and up to 11 Mbps in 802.11b mode.
5. The preamble mode should be set to Auto, but in some cases you may want to set it to either long or short, depending on your setup.
6. The camera supports three different wireless modes:
   - 11b/g Mixed (camera connects to any 11 or 54 Mbps wireless access point)
   - 11b only (camera connects only to 11 Mbps wireless access points)
   - 11g only (camera connects only to 54 Mbps wireless access points)

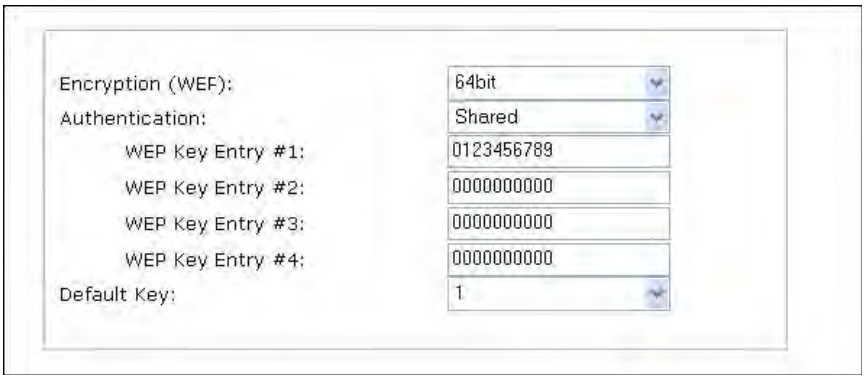
6.7.2 Wireless Security Settings

WEP

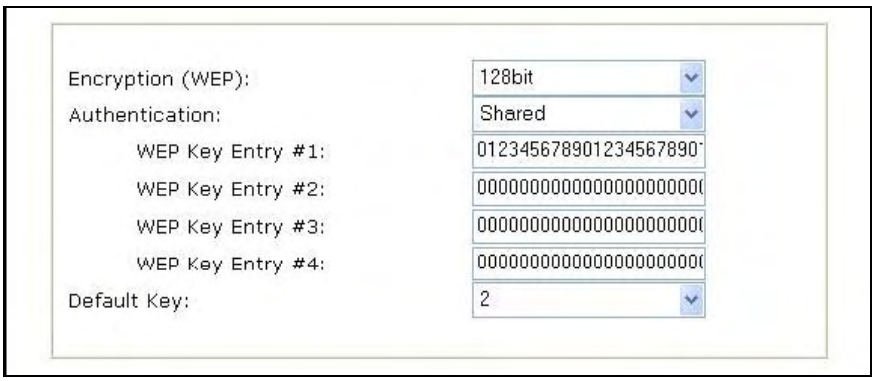
Wireless network communications are easily intercepted. WEP (wired equivalent privacy) is an encryption method specified by the IEEE 802.11b standard to make any intercepted communications extremely difficult to interpret by unauthorized parties.

The WEP key needs to be entered in HEX code. To set up 64-bit WEP, input 10 HEX characters, for example 0123456789. To set up 128-bit WEP input 26 HEX characters, for example 01234567890123456789012345.

Authentication: WEP uses two types of authentication methods to authenticate the connection request. One is Open key authentication, in which all clients are allowed to authenticate; the second is Shared key authentication, which allows the AP (access point) to send the client a challenge text, which the client encrypts and returns to the AP. If the AP successfully decrypts the challenge text, the client is authenticated. Set the authentication type as per the access point authentication type. The wireless camera's Auto mode automatically switches between open and shared modes.
Example 1: If your access point uses 64-bit encryption, the default key is 1, authentication is shared and the key value is 0123456789. Your wireless camera WEP setting will be:


Encryption (WEP): 64bit
Authentication: Shared
WEP Key Entry #1: 0123456789
WEP Key Entry #2: 0000000000
WEP Key Entry #3: 0000000000
WEP Key Entry #4: 0000000000
Default Key: 1

Example 2: If your AP uses 128-bit encryption, the default key 2, authentication is shared and the key value is 01234567890123456789012345. Your wireless camera WEP setting will be:



NOTE: All four WEP keys need to be set up the exactly same way they are defined in your wireless access point.
Make sure the encryption code is the same as that of the access point to which your camera will be connected under Infrastructure mode. Your PC's encryption code also needs to be set up to match the camera's encryption code under either Infrastructure or Ad hoc mode.
The default setting for the encryption key is Disable; therefore, to secure the wireless transmission, be sure to enable the encryption key by entering the relevant data.
NOTE: **Carefully enter encryption codes, as any error will cause the communication link to fail.**

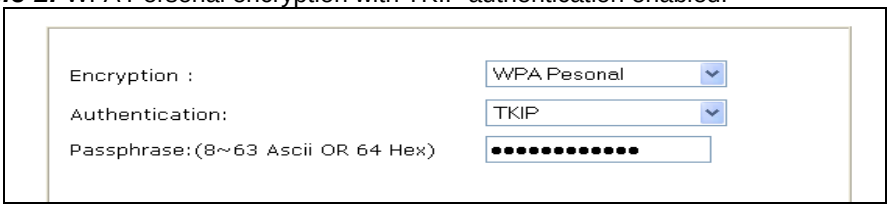
WPA & WPA2 (personal)

Wi-Fi Protected Access (WPA and WPA2) is a more effective way to secure wireless (Wi-Fi) computer networks. It was created in response to several serious weaknesses which researchers had found in the previous system, Wired Equivalent Privacy (WEP). WPA implements the majority of the IEEE 802.11i standard, and was intended as an intermediate measure to take the place of WEP while 802.11i was prepared. WPA is designed to work with all wireless network interface cards, but not necessarily with first generation wireless access points. WPA2 implements the full standard, but will not work with some older network cards. WPA and WPA2 provide good security, with two significant issues:

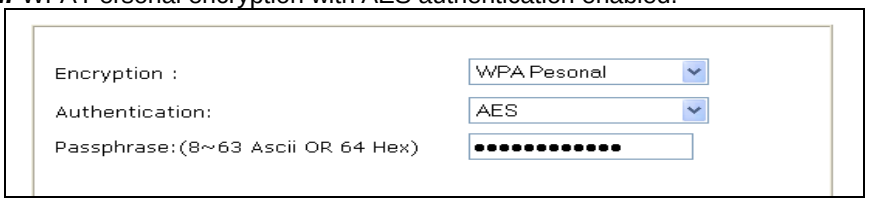
Either WPA or WPA2 must be enabled and chosen in preference to WEP. WEP is usually presented as the first security choice in most installation instructions.
The most common choice for homes and small offices is the "Personal" mode, for which a pass-phrase is required. ***For full security, the pass-phrase must be longer than the typical 8 to 10 characters in ASCII or 64 hex characters.***

Pre-shared key mode (PSK, also known as **personal mode**) is designed for home and small office networks that cannot afford the cost and complexity of an 802.1X authentication server. Each user must enter a pass-phrase to access the network. The pass-phrase may be from 8 to 63 printable ASCII characters or 64 hexadecimal digits (256 bits).

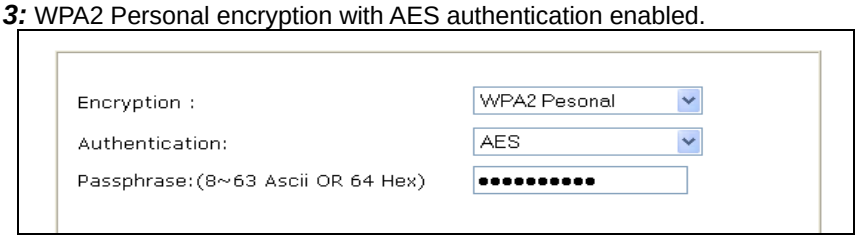
Example 1: WPA Personal encryption with TKIP authentication enabled.



Example 2: WPA Personal encryption with AES authentication enabled.



Example 3: WPA2 Personal encryption with AES authentication enabled.



IMPORTANT

Infrastructure Mode

This is an 802.11 networking framework in which devices communicate with each other by first going through an access point (AP). In Infrastructure mode, wireless devices can communicate with each other or can communicate with a wired network. When one AP is connected to a wired network and a set of wireless stations, it is referred to as a basic service set (BSS). An extended service set (ESS) is a set of two or more BSSs that form a single sub network. Most corporate wireless LANs operate in Infrastructure mode because they require access to the wired LAN in order to use services such as file servers or printers.

Ad hoc Mode

This is an 802.11 networking framework in which devices or stations communicate directly with each other, without the use of an AP. Ad hoc mode is also referred to as Peer-to-Peer mode, or an independent basic service set (IBSS). Ad hoc mode is useful for establishing a network in which a wireless infrastructure does not exist or in which services are not required.

SSID (service set identifier)

This is a 32-character unique identifier attached to the header of packets sent over a WLAN that acts as a password when a mobile device tries to connect to the BSS. The SSID differentiates one WLAN from another, so all access points and all devices attempting to connect to a specific WLAN must use the same SSID. A device will not be permitted to join the BSS unless it can provide the unique SSID. An SSID is also referred to as a network name because, essentially, it is a name that identifies a wireless network.

To connect a wireless client such as a Wireless Pro Series Network Camera to a specific AP, the user of the camera should specify the SSID name in the camera’s wireless IP setting.

7: PoE (Power over Ethernet) Support

Power over Ethernet, or PoE, technology describes a system to transmit electrical power, along with data, to remote devices over standard twisted-pair cable in an Ethernet network. This technology is useful for powering IP telephones, wireless LAN access points, network cameras, remote network switches, embedded computers, and other appliances where it would be inconvenient, expensive (mains wiring must often be done by qualified and/or licensed electricians for legal or insurance reasons) or infeasible to supply power separately.

The standard IEEE 802.3af describes two types of devices: Power Sourcing Equipment (PSE) and Powered Devices (PD). Power sourcing equipment provides power to the powered devices. The network camera represents the powered device, whereas a PoE Injector is a PSE device. The Pro Series Network Camera models, *except* for model 550710, are IEEE 802.3af standard PoE compliant. They can be used with any IEEE 802.3af-compliant PoE injector.
NOTE: Camera model 550710 can only be powered over Ethernet using a special accessory.

On the next two pages, you can find an overview of available PSE equipment from INTELLINET NETWORK SOLUTIONS. ***NOTE:*** The information is subject to change.

Power over Ethernet (PoE) Injector
1 Port, 48 V DC, IEEE 802.3af Compliant

Connects one network camera.
Part Number / Model: **524179**

PoE Midspan

8-Port rackmount, IEEE 802.3af compliant

8 Port Injector with 8 inputs and 8 outputs for eight network cameras.
Part Number / Model: **502931**

PoE Office Switch

8-Port Desktop, IEEE 802.3af compliant, Endspan

10/100 Mbps Fast Ethernet Switch for eight network cameras.
Part Number / Model: **503358**

PoE Web-Smart Switch

8-Port Desktop, IEEE 802.3af compliant, Endspan

10/100 Mbps Fast Ethernet Switch for eight network cameras. Switch provides smart functions such as VLAN, QoS and port controls.
Part Number / Model: **502917**

Fast Ethernet Rackmount PoE Switch

16-port, IEEE 802.3af compliant, Endspan

10/100 Mbps Fast Ethernet Switch for sixteen network cameras.
Part Number / Model: **524155** (Class 2, 7.3 Watts per port)
Part Number / Model: **503631** (Class 3, 15.4 Watts per port)
The class 2 version provides sufficient power for sixteen network cameras.

The accessory below is specially designed for camera model 550710:

Power over Ethernet Injector

1-port, for network camera model 550710 only

Connects one network camera (550710 only).
Part Number / Model: **521444**

8: Multi-Viewer Application for Windows

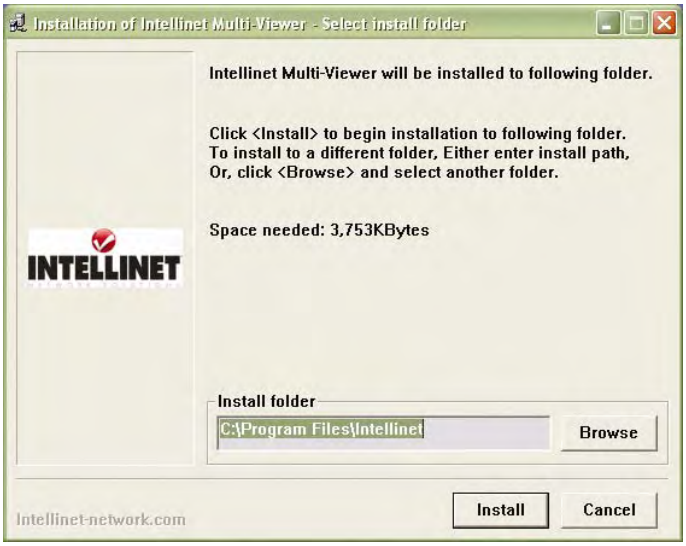
With "Multi-Viewer for Windows," it is possible to view up to four different network cameras on one PC monitor.

Installation

Insert the supplied CD into the CD-ROM drive of your computer and open the "Multi-Viewer" folder. Find "Multiviewer.exe" and double-click it to start the installation.

Installation of Intellinet Multi-Viewer
This will install Intellinet Multi-Viewer on your computer.
It is recommended that you exit all other programs before proceed with installation.
Click <Next> to continue installation,
Or, click <Cancel> to cancel installation.
INTELLINET
Intellinet-network.com
Next
Cancel

Click Next.



Click "Browse" to select the installation folder and click "Install" to begin the installation.
Wait for the installation to finish.

Multi-Viewer opens and the following screen appears:

Configuration Page
Access the IP address, ports, frame rate, username and more.

Refresh
Re-connect to the selected camera.

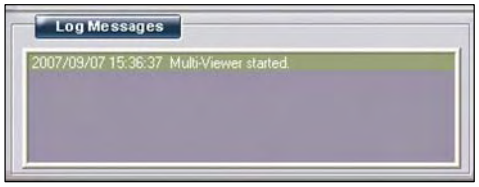
Delete
Remove the selected camera from the configuration.

End Program
Quit Multi-Viewer.

Expand/Collapse the Camera Information and Message Window

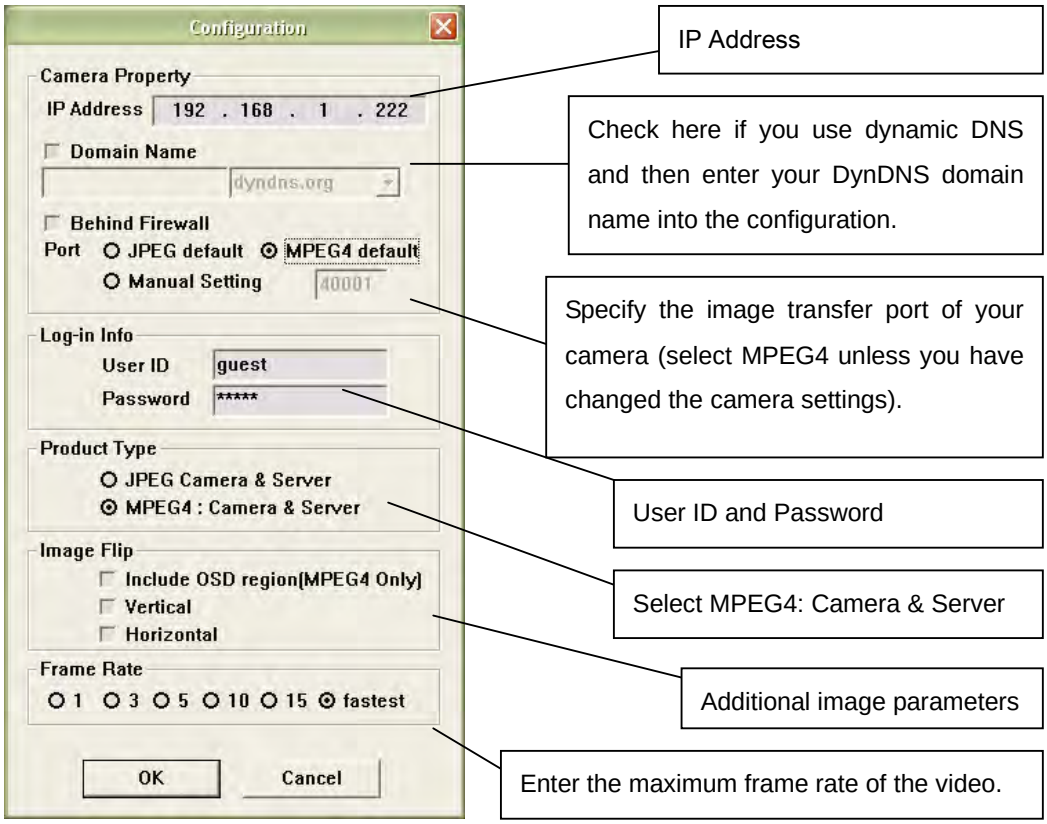
Camera Information
Camera Type
Stream Type
IP
Log-in ID
#1 0 F/S Jpeg Jpeg 67.111.35.48 guest
#2 0 F/S Jpeg Jpeg 10.10.8.215 guest
#3 0 F/S Jpeg Jpeg 0.0.0.0 guest
#4 0 F/S Jpeg Jpeg 0.0.0.0 guest

Camera Information
Displays information such as frame rate (F/S), camera type, stream type, camera IP and user name.



Log Messages
Displays information about changed configurations and connected cameras.

Adding a camera
To add a camera, simply double-click the location on the screen (upper left, lower left, upper right and lower right square). Enter the correct settings in the configuration window and click "OK."


Configuration
Camera Property
IP Address 192 . 168 . 1 . 222
Domain Name
dyndns.org
Behind Firewall
Port JPEG default MPEG4 default
Manual Setting 40001
Log-in Info
User ID guest
Password *****
Product Type
JPEG Camera & Server
MPEG4 : Camera & Server
Image Flip
Include OSD region(MPEG4 Only)
Vertical
Horizontal
Frame Rate
1 3 5 10 15 fastest
OK
Cancel
IP Address
Check here if you use dynamic DNS and then enter your DynDNS domain name into the configuration.
Specify the image transfer port of your camera (select MPEG4 unless you have changed the camera settings).
User ID and Password
Select MPEG4: Camera & Server
Additional image parameters
Enter the maximum frame rate of the video.

Repeat the steps for each camera. Below is a sample screenshot of Multi-Viewer showing four cameras:

Multi-Viewer also supports Pro-Series JPEG Cameras such as model 550710 (wired) and 550703 (wireless). The JPEG cameras show a grey frame around the live image (see above image 2, 3 and 4), whereas the MPEG4 models do not.

Multi-Viewer does not have the ability to create recordings. It is merely designed to monitor four cameras on one screen. If you are looking for a way to use the camera's integrated motion detection and record AVI video on your computer's hard drive when motion occurs, you need to use the ETSP Client utility.

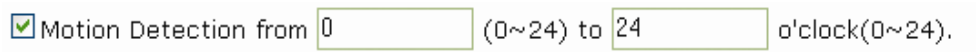
9: ETSP Client

ETSP stands for "Event Triggered Saving Program." This utility allows you to automatically record video on the HDD of your computer whenever the camera detects a motion. The latest version of ETSP Client is available on networkipcamera.com as a free download.

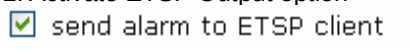
Getting Started

To use ETSP Client, you first need to activate the ETSP option in the Event Trigger Configuration of the camera. See section 6.5 for additional information.

1. Activate Motion Detection



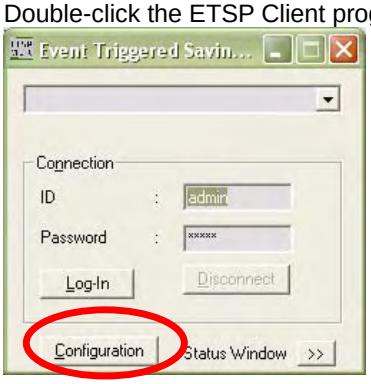
2. Activate ETSP Output option



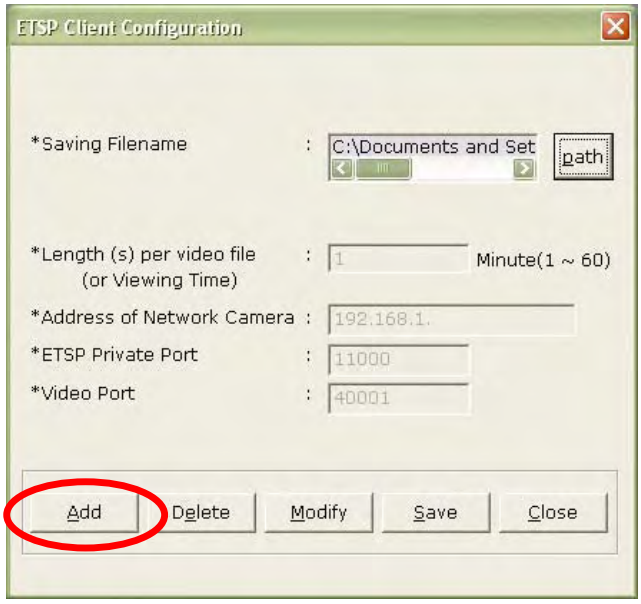
Once this is activated, the camera will send a "signal" to the network whenever motion is detected. ETSP Client is designed to monitor the camera for this signal. When ETSP detects this signal, it starts recording immediately.
The following steps only need to be performed the first time you run ETSP Client.

Setting up the camera in ETSP Client

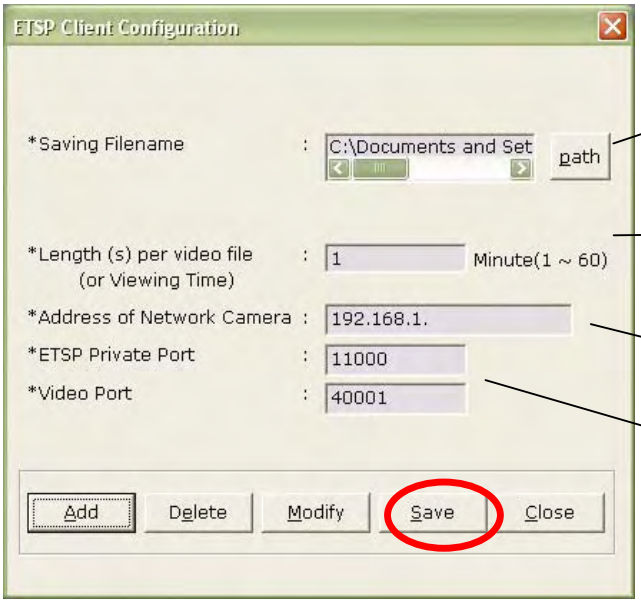
Double-click the ETSP Client program to start it. The following screen appears:



Click on "Configuration" to open the camera configuration screen.



Click "Add".



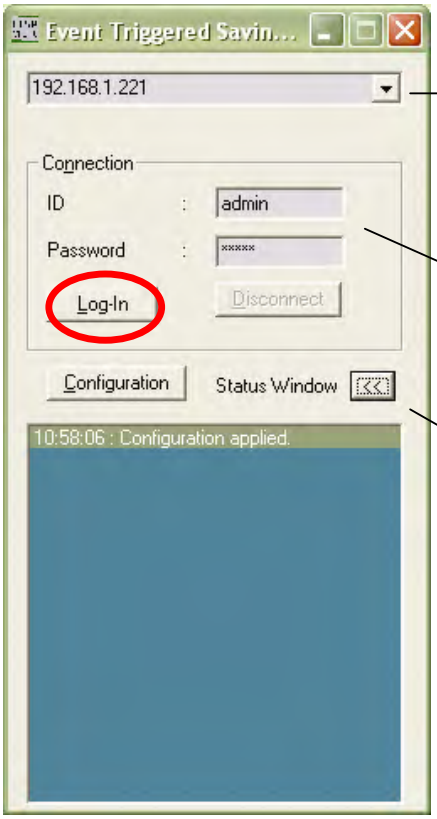
Define the location where the video should be saved.

Specify the length of the recorded video (in minutes).

Enter the camera's IP address.

ETSP port and video port need to be entered here. If you have changed the port settings in the camera, you need to make adjustments here.

Click "Save" to save the settings and open the main screen of ETSP Client.

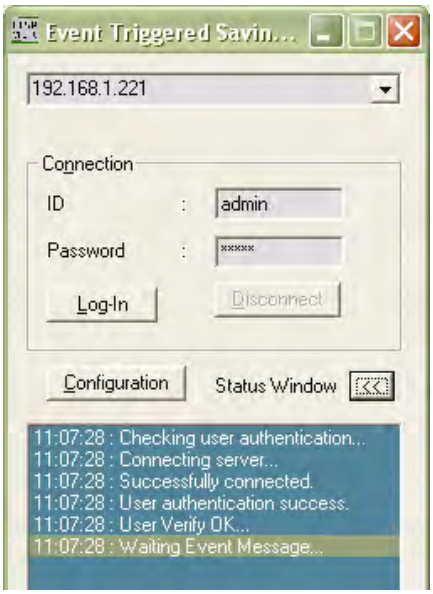


The IP address of the camera you are monitoring is displayed here. If multiple cameras are set up, you can select them from the drop-down list.

Enter a valid username and password for the camera (an administrator account is required).

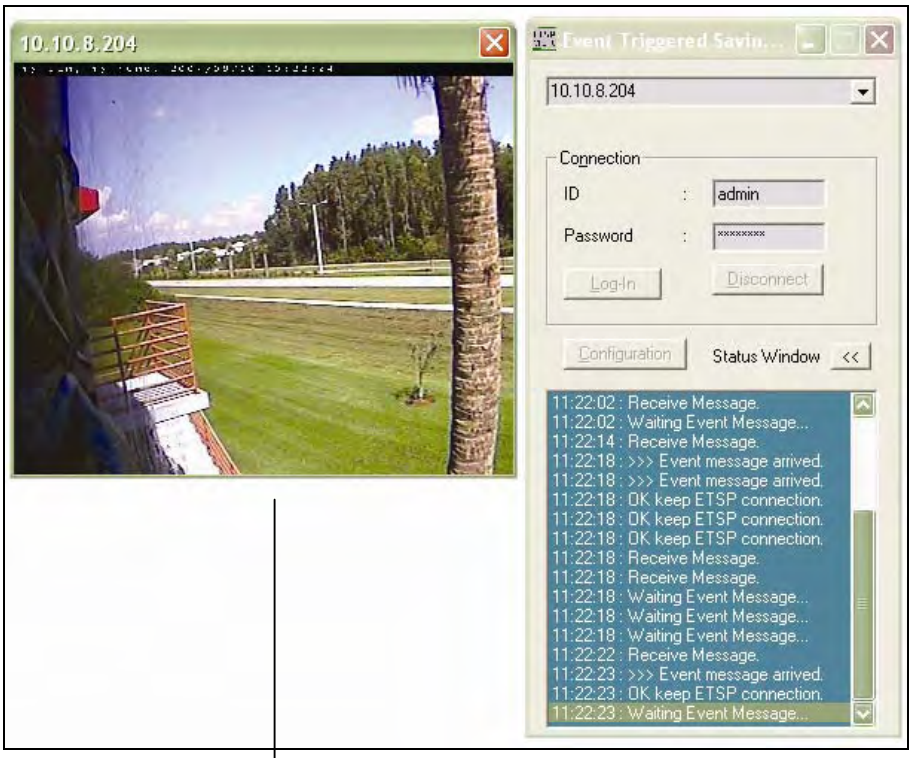
Click this button to open / close the Status window.

Click on "Login" to start the monitoring and recording process.



ETSP Client is now connected to the camera.

When the camera detects motion, ETSP Client will trigger the recording. ETSP Client shows the video and displays additional information in the status message window. The image below shows an example of ETSP Client actively recording a video on the HDD.



Live Video window:

Whenever a recording is active, this window opens and lets you monitor the activity in real time.

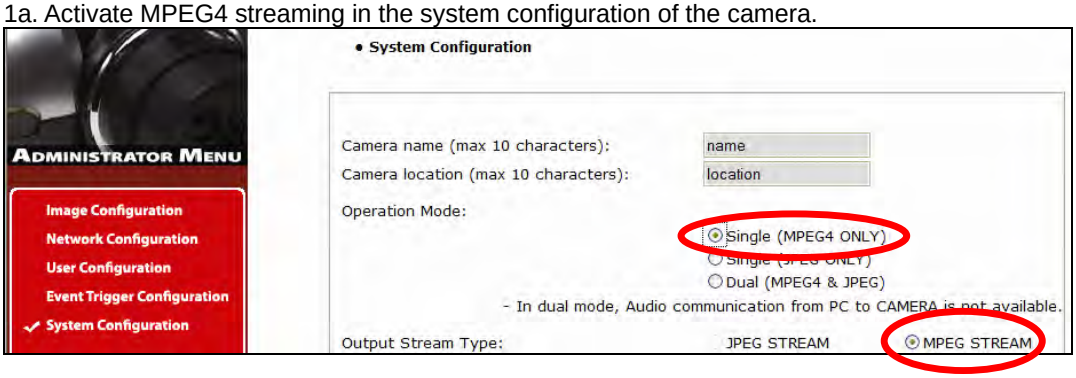
Real Time Status window

10: RTSP Video Playback

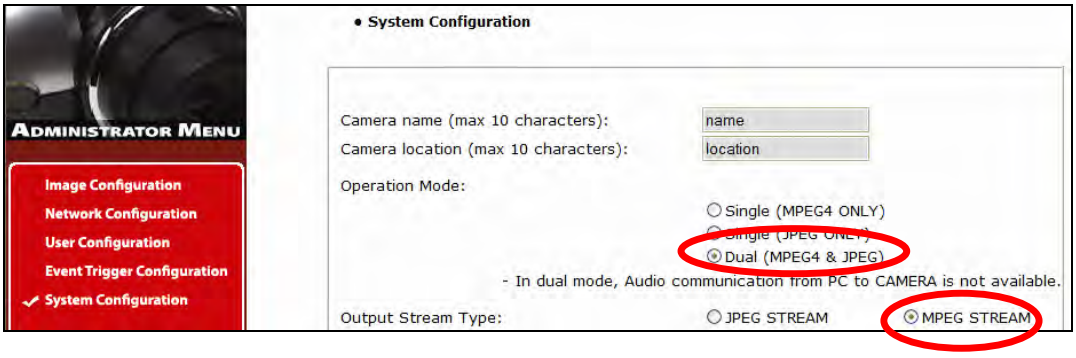
RTSP stands for "Real Time Streaming Protocol ." RTSP enabled video streaming clients, such as MPlayer, can access the video data stream of the camera directly and you can watch the live video without connecting to the camera with your Web browser first. MPlayer is freeware.

RTSP Playback in MPlayer for Windows

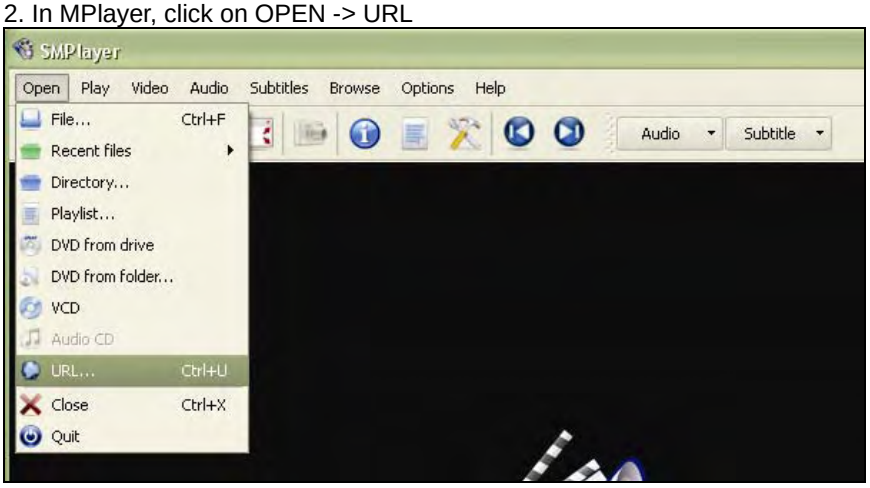
1a. Activate MPEG4 streaming in the system configuration of the camera.



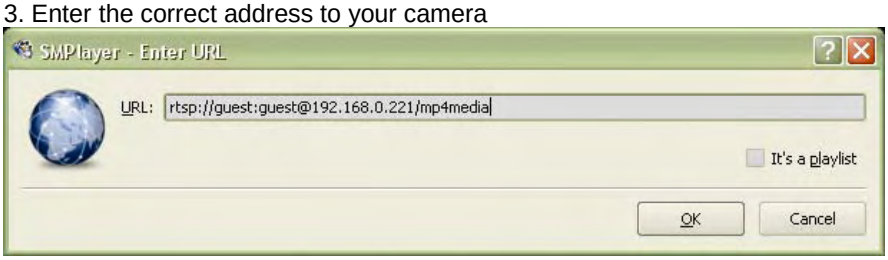
1b. Alternatively you can activate dual-mode with MPEG4 streaming in the system configuration of the camera.



2. In MPlayer, click on OPEN -> URL



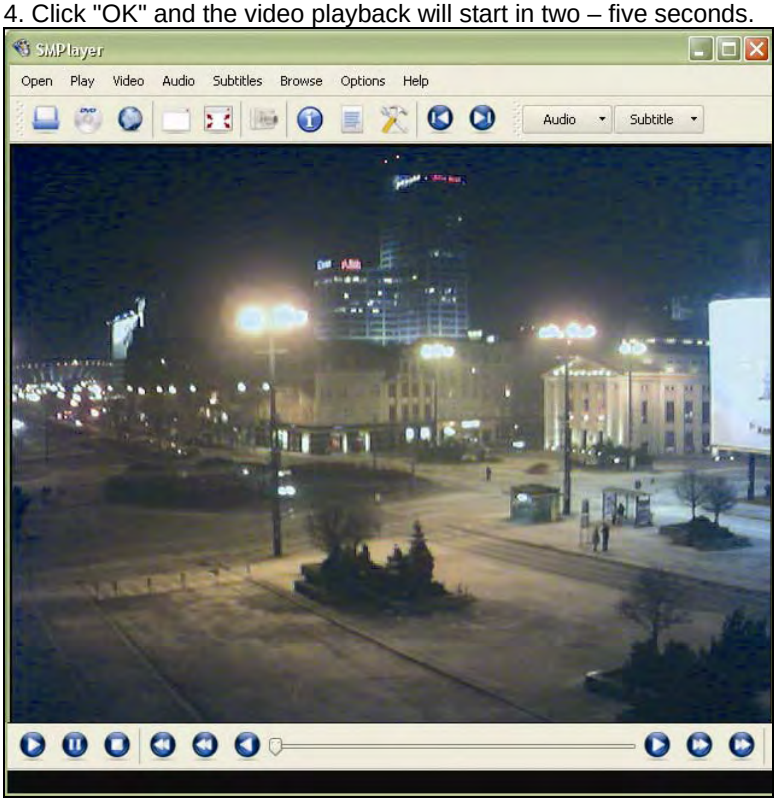
3. Enter the correct address to your camera



URL: rtsp://guest:guest@192.168.0.221/mp4media

guest:guest = valid user name and password
192.168.0.221 = IP address or web address of your camera
mp4media = fixed part of the URL

4. Click "OK" and the video playback will start in two – five seconds.



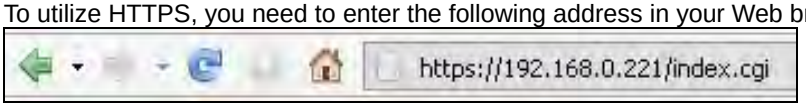
Note:
1. RTSP support is limited to the MPEG4 camera models; camera 550710 does not support RTSP.
2. RTSP support may not work with all RTSP enabled clients; e.g., RTSP is incompatible to Microsoft's Windows Media Player.
3. RTSP support requires the camera to have an updated firmware installed. If the network settings page of your camera does not show a port for RTSP, you need to update the firmware at www.networkipcamera.com.
4. As new versions of RTSP enabled clients are released, compatibility to the network camera can not always be guaranteed.

11: SSL Encryption / Access via HTTPS

The MPEG4 cameras are equipped with SSL encryption, a safe way of accessing your camera. SSL encryption ensures, that the data traffic between your camera and the computer is encrypted.

Access to the camera via HTTPS:

To utilize HTTPS, you need to enter the following address in your Web browser:



Note: Use "https" instead of "http".

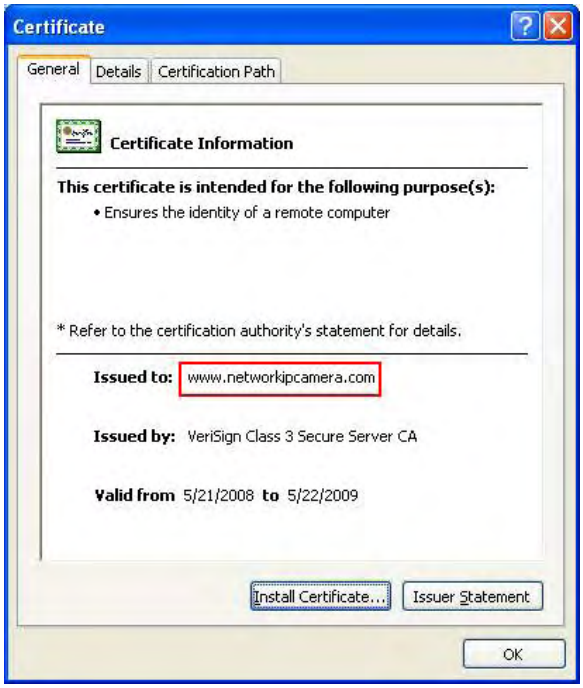
Security Alert
Information you exchange with this site cannot be viewed or changed by others. However, there is a problem with the site's security certificate.
The security certificate is from a trusted certifying authority.
The security certificate date is valid.
The name on the security certificate is invalid or does not match the name of the site
Do you want to proceed?
Yes
No
View Certificate

You will be presented with a security message (may vary depending on your system). Despite the warning message, you should click on "Yes" to continue. The message tells you, that the security certificate was issued for the domain networkipcamera.com and that there is a mismatch between the web site and the address of the camera. Since your network camera runs on a different IP address than the web site, the warning message is shown.

The message below will be shown to users of MS Internet Explorer 7.x

There is a problem with this website's security certificate.
The security certificate presented by this website was issued for a different website's address.
Security certificate problems may indicate an attempt to fool you or intercept any data you send to the server.
We recommend that you close this webpage and do not continue to this website.
Click here to close this webpage.
Continue to this website (not recommended).
More information

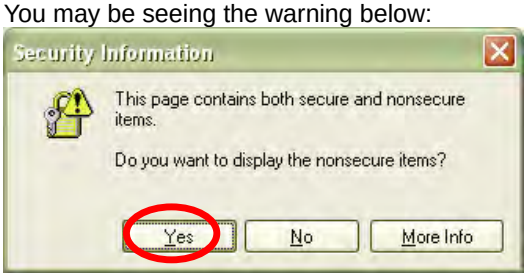
Click "Continue to this website (not recommended)" to proceed.



Click on "View Certificate" to view the details. The image on the left shows a screenshot of MS Internet Explorer 6.x.

The certificate must be issued to www.networkipcamera.com.

You may be seeing the warning below:



This message is shown, whenever a web site with secure and nonsecure elements is shown.
Nonsecure elements can be images which are not crucial for the security.
The question should be answered with "Yes".

12: Remote Access to a Camera & Router Setup

To gain access to a camera in your local network over the Internet, certain ports need to be opened and forwarded in your router. The camera uses the following ports by default:
- Web Server port = 80
- Image Transfer port = 40001
- Audio Send port = 40008
- Audio Receive port = 40008
- Upgrade port = 9000
- PTZ port = 10000
- ETSP port = 11000
- HTTPS port = 443
- RTSP port = 554

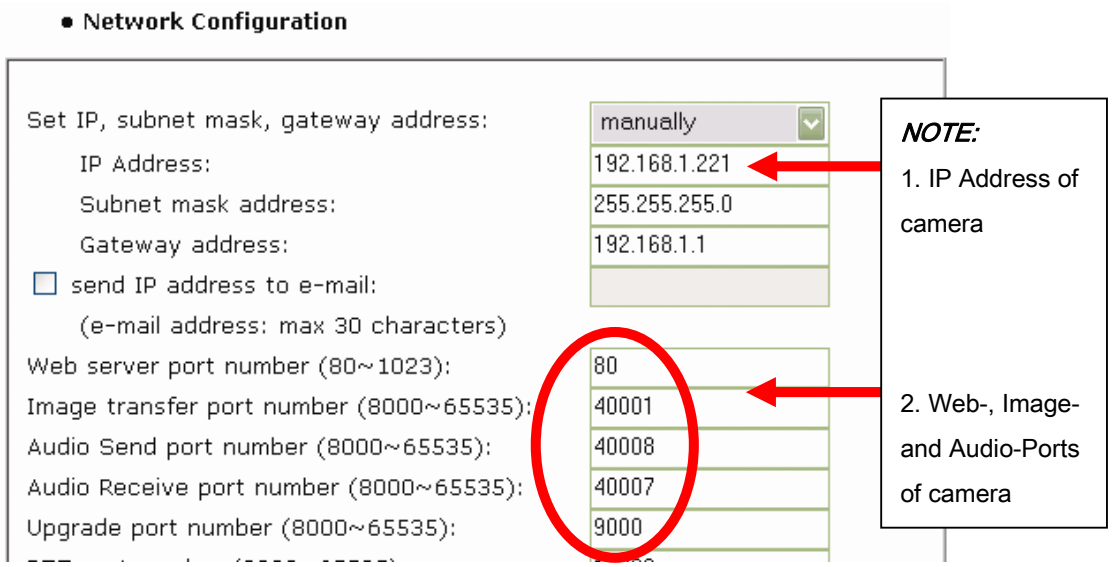
To view the live image over the Internet, the Web server port and image transfer port need to be opened and forwarded in the router.

To receive and send sound, the audio send and receive ports must also be added to the router configuration.

If you wish to use HTTPS port 443 must be included to the router setup.

If you want to use the RTSP protocol port 554 needs to be added to the port forwarding setup of the router.

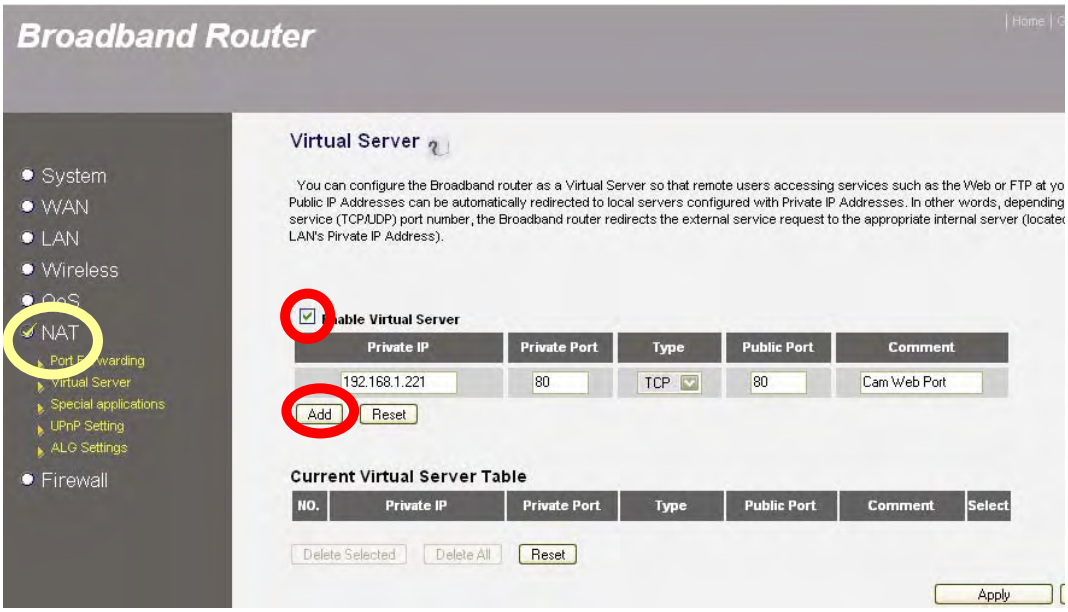
Before you can add the information in the router, find out which local IP address your camera has and which ports it uses by connecting to the camera's Web administrator menu (Network Configuration screen).



MPEG4 Network Camera default values

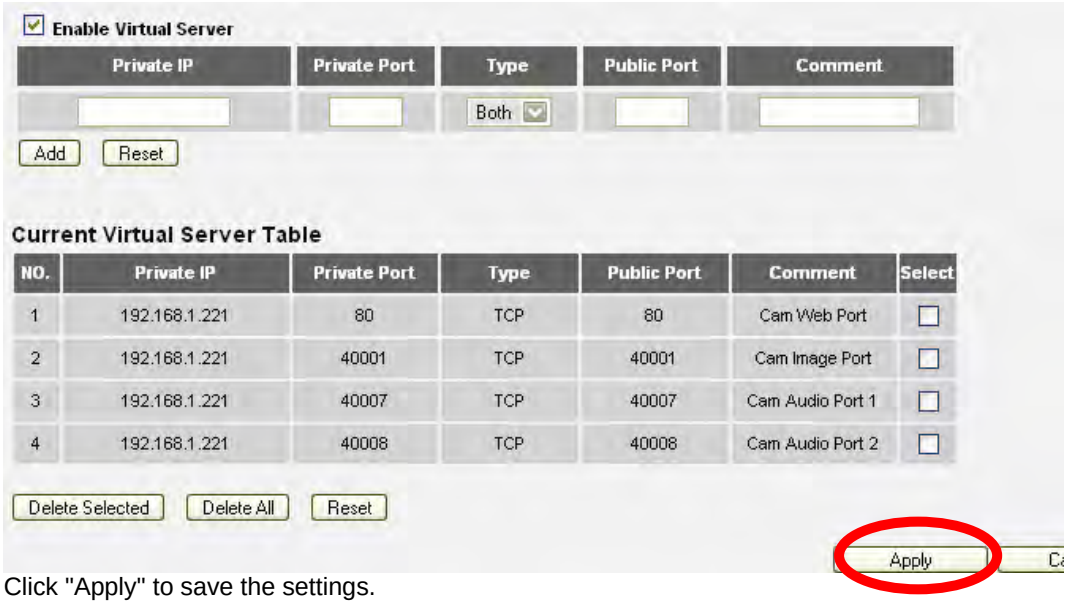
On the following pages are setup examples for several INTELLINET routers. The procedure for other routers from other brands is very similar, but some details may be different.

Setup Example 1: INTELLINET NETWORK SOLUTIONS MIMO Wireless Turbo G Router and Wireless N Router:



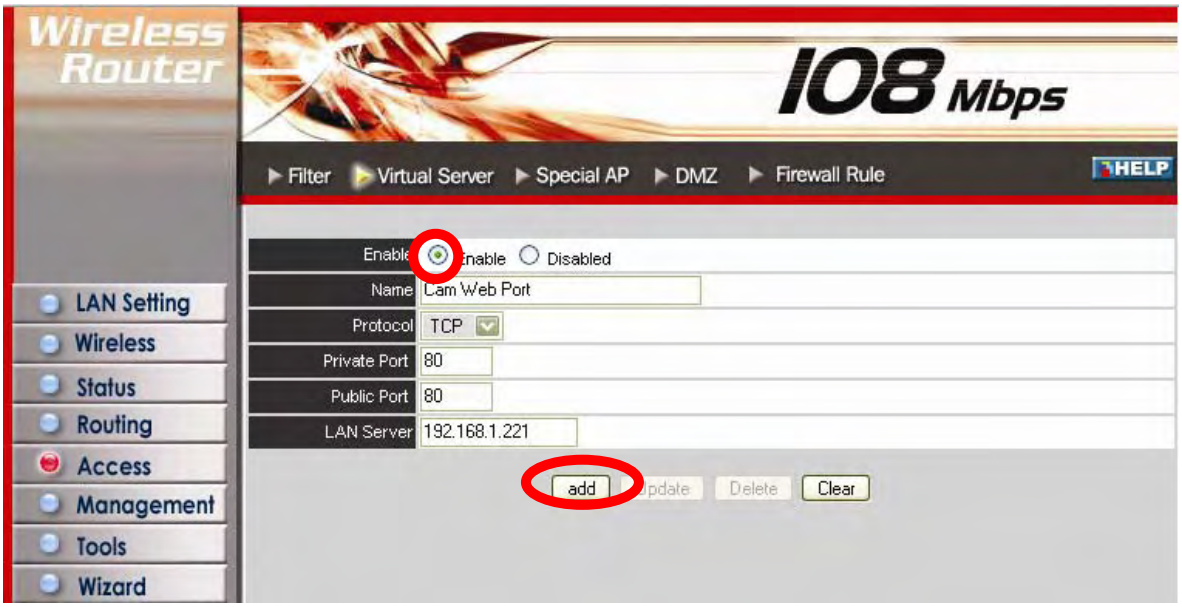
Click on NAT -> Virtual Server.
Check (x) Enable Virtual Server.
Enter the camera IP address, along with the Web server (private and public port should be identical), select type = TCP and enter a description in the comment field. Click on ADD.
Repeat the steps for the other ports.

The end result should look like this:



Click "Apply" to save the settings.

Setup Example 2: INTELLINET NETWORK SOLUTIONS Wireless Super G Router (Model 502566):

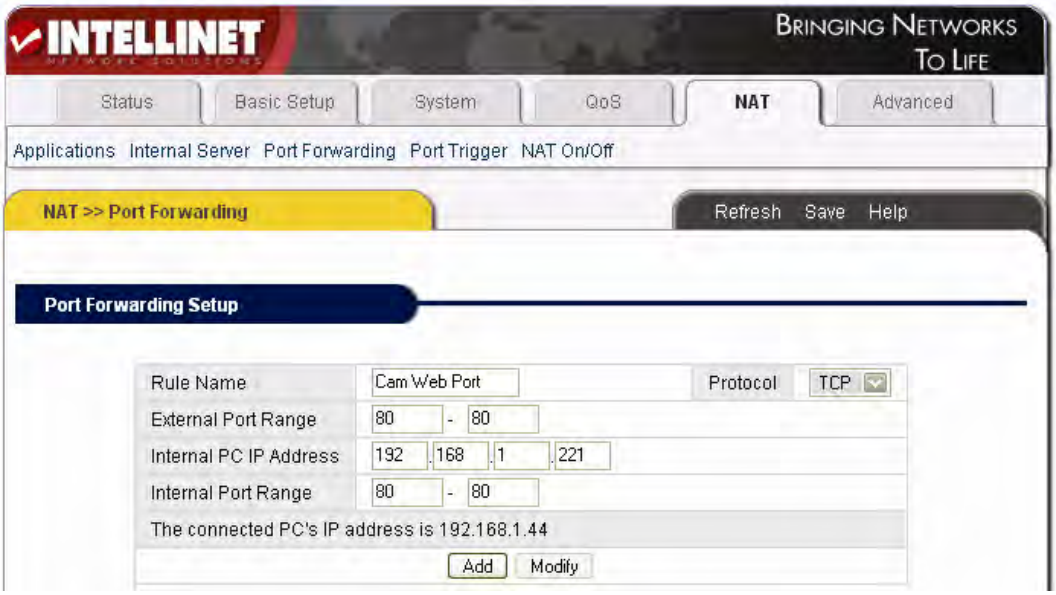


Click on Access -> Virtual Server.
Check (x) Enable Virtual Server.
Enter a descriptive name and the public and private ports, then select TCP as the protocol and enter the IP address of the camera as the LAN Server.
Click on "add."

The end result should look like this:

	Name	Protocol	LAN Server
☐	Virtual Server FTP	TCP 21/21	0.0.0.0
☐	Virtual Server HTTP	TCP 80/80	0.0.0.0
☐	Virtual Server HTTPS	TCP 443/443	0.0.0.0
☐	Virtual Server DNS	UDP 53/53	0.0.0.0
☐	Virtual Server SMTP	TCP 25/25	0.0.0.0
☐	Virtual Server POP3	TCP 110/110	0.0.0.0
☐	Virtual Server Telnet	TCP 23/23	0.0.0.0
☐	IPSec	UDP 500/500	0.0.0.0
☐	PPTP	TCP 1723/1723	0.0.0.0
☑	Cam Web Port	TCP 80/80	192.168.1.221
☑	Cam Image Port	TCP 40001/40001	192.168.1.221
☑	Cam Audio Send Port	TCP 40008/40008	192.168.1.221
☑	Cam Audio Receive Port	TCP 40007/40007	192.168.1.221

Setup Example 3: INTELLINET NETWORK SOLUTIONS Wireless G Broadband Router (Model 523431), 4 Port Broadband VPN Router (Model 523608), 8 Port Broadband VPN Router (Model 523615) and Dual WAN Router (Model 524049).



Click on NAT -> Port Forwarding.
Enter a rule name, external port range, camera IP address and internal port range. The above example shows port 80. Click "Add" to save the rule.
Repeat the steps for the other ports.

The end result should look like this:

Idx	OP	Rule Name	Proto	External Port Range	Internal PC IP	Internal Port Range	Del
1	☑	Cam Web Port	tcp	80~80	192.168.1.221	80~80	☐
2	☑	Cam Image Port	tcp	40001~40001	192.168.1.221	40001~40001	☐
3	☑	Cam Audio Send Port	tcp	40008~40008	192.168.1.221	40008~40008	☐
4	☑	Cam Audio Recve Port	tcp	40007~40007	192.168.1.221	40007~40007	☐

Even though the camera only requires four single ports to be forwarded, and not a range of ports, you still need to enter the single ports as port ranges into this router model.

13: Developer Information

This section of the user manual contains useful information for software developers and Web programmers.

13.1 Software Development Kit (SDK)

Software developers can download an SDK for INTELLINET NETWORK SOLUTIONS Pro-Series cameras and network video servers from www.networkipcamera.com. The SDK consists of different documents, sample programs and sample code snippets for various applications.

The SDK contains:

HTTP API
INTELLINET NETWORK SOLUTIONS Network Cameras support HTTP CGI calls to perform certain functions, or to remotely program the camera. As a developer you have access to virtually every parameter the camera has to offer: You can query the alert state of the camera and trigger the digital I/O port, and change image settings and network parameters remotely.

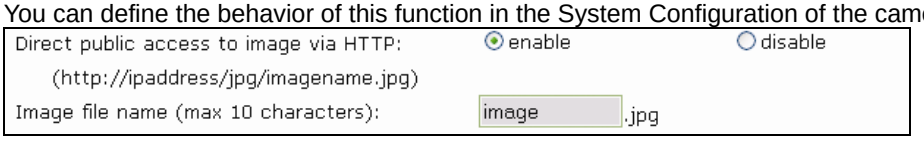
Web Integration
Documentation to integrate the live video of the camera in an HTML page that can be viewed with any standard Web browser.

MS Visual Studio (C++, Visual Basic)
Documentation helpful for Windows program developers to assist in writing custom applications for the INTELLINET NETWORK SOLUTIONS network camera.

13.2 Direct Access to internal JPEG

To utilize the camera in third-party video surveillance programs, you can activate the direct image access. It allows accessing the internal JPEG image of the camera that other programs can download.

You can define the behavior of this function in the System Configuration of the camera:



Direct public access to image via HTTP:
enable: Any user can access the image. No username or password is required to see the image.
disable: A username and password must be provided in order to see the image.

Image file name (max. 10 characters):
The default name is "image," but you can change it for security reasons.

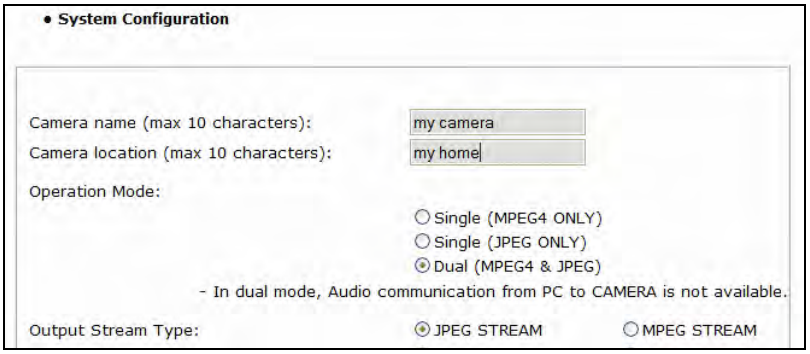
You can access the image using the URL below:
http://camera_ip/jpg/image.jpg

Enter the URL in your Web browser. After you enter the username and password, you can see the live image. Refresh the view to see the most current image.

13.3 Motion-JPEG Access

The MPEG4 cameras support a dual-mode streaming capability. This means that the camera can output MPEG4 and Motion-JPEG video data simultaneously. Motion-JPEG is the preferred method when using the camera with third-party video surveillance applications. It is widely supported, and is often the only image format accepted by courts, who consider MPEG4 compression too lossy.
Motion-JPEG video, on the other hand, cannot compress video data as effectively as MPEG4 does. Thus, the resulting video stream requires a higher network bandwidth.

To utilize the Motion-JPEG stream, first enable dual mode streaming in the camera's system configuration.



The Operation Mode parameter needs to be set to "Dual (MPEG4 & JPG)."

The following URL returns the Motion-JPEG stream:
http://camera_address/image.cgi?id=guest&passwd=guest&mode=http

NOTE: Network Camera model 550710 does not support Motion-JPEG image access.

Appendix A: Frequently Asked Questions (FAQ)

1. What is the default IP address of the network camera?
The default IP address is 192.168.1.221

2. I use a MacOS or Linux system and cannot use IP Installer to set up my camera. How can I install the camera without that tool?
1. You will need to change the IP address of your MacOS or Linux PC so that it is in the range of the camera's default IP address: 192.168.1.221 (network mask 255.255.255.0). For example, you can set the IP address of your computer as 192.168.1.100 (subnet mask 255.255.255.0). For information on how to manually set the IP address of your system, refer to the documentation of the operating system you are using.

2. Then you can open the camera homepage in your Web browser and change the camera's IP information on the Network Configuration screen of the administrator menu (see section 6.3).

3. After changing the Camera's Web Server Port from 80 to a different value, access to the camera is no longer possible.
Whenever you change the Web server port from the standard 80 to a different value, you need to append the port to the camera's IP address. The syntax is always http://cameraip:portnumber. Example: When you change the Web server port to 81, the correct address would be: http://192.168.1.221:81.

4. IP Installer does not find the camera. Why?

- The camera is installed behind a PoE (Power over Ethernet) device.
  Remove the PoE temporarily or set up the camera without IP Installer.

- A desktop firewall application such as Norton Internet Security (NIS) is installed. Uninstall NIS or set up the camera without IP Installer.

- Windows XP SP2 is installed and the integrated firewall is active.
  Deactivate the Windows firewall temporarily or set up the camera without IP Installer.

- The network connection to the camera is not working. Verify that the camera has an active network link.

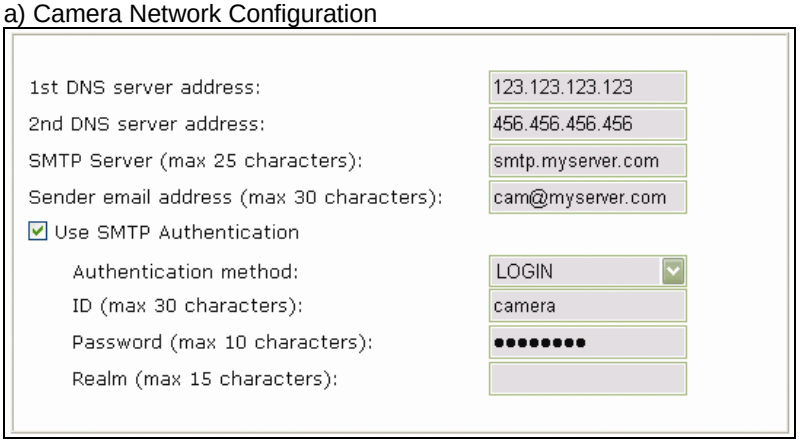
- The camera needs a reset. See Appendix H: Reinstating the factory default settings.

5. Can I use the camera's integrated motion detection function to secure sensitive areas and goods of a high value?
Using the Network IP Camera's integrated motion detection function for security functions is not recommended, as the function does not work as reliably as professional security sensors.

We recommend using professional security monitoring software in combination with the Network IP Camera. You may also connect external security sensors to the camera's digital input port for increased security.

6. How do I activate the E-mail Function?

a) Camera Network Configuration



DNS Server Address

A DNS server is required if you enter the SMTP server using the domain name. If you enter the IP address of the SMTP server you do not need to specify DNS server information, but if you enter the domain name of your mail server (e.g., mail.myserver.com or smtp.myserver.com) you need to type in at least one DNS server.

SMTP Server (max. 25 characters)

Type in the address (IP address or domain name) of the outgoing mail server. This is typically the same mail server you have set up in your mail client settings (e.g., the MS Outlook profile).

Sender e-mail address (max. 30 characters)

This should not be left blank as many SMTP servers refuse to deliver e-mail if the sender address is missing. The sender address can be any e-mail address. It does not need to be a real, existing, e-mail address. You can type in mycamera@mydomain.com or cam@myserver.com.

Use SMTP Authentication

Most SMTP servers are password protected to prevent illegal access (anti-spam). If your SMTP server requires authentication, enter the username and password required for this server. Those are the same values you normally use for the Email Client (Outlook, Thunderbird) on your PC.

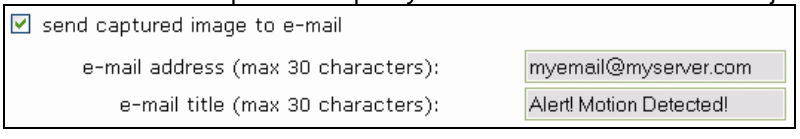
Authentication method

The authentication method should be set to LOGIN in most cases. Unless your server specifically requires different settings, LOGIN is the preferred choice. Other options are PLAIN and DIGEST-MD5.

If your server is an Open Relay, you do not need to activate SMTP authentication.

b) Camera Event Trigger Configuration

Activate the e-mail option and specify the e-mail address and the subject of the e-mail.



7. The camera does not send any e-mails. Why?

1. The problem occurs because the camera cannot contact the E-mail server
Check:

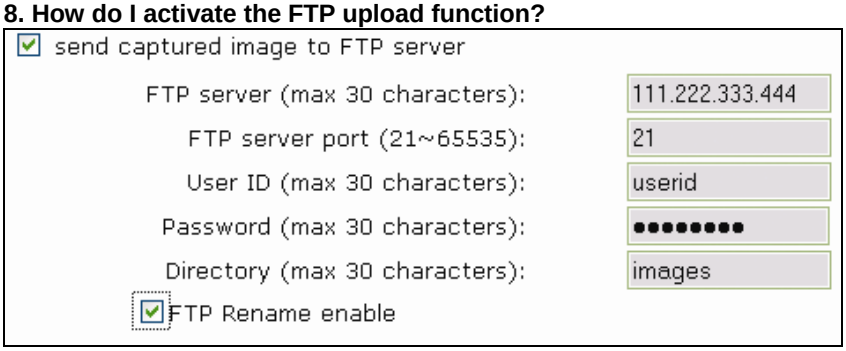
- Is the e-mail (SMTP) server address correct? (Network Configuration)
- Did you specify the correct gateway IP address? (Network Configuration)?
- Did you specify correct DNS servers? (Network Configuration)
- Did you enter the correct e-mail address? (Event Trigger Configuration)
- Did you specify the e-mail title? (Event Trigger Configuration)

2. The e-mail server denies the delivery request from the camera
Check:

- Is a valid sender address specified? (Network Configuration)
- Did you activate SMTP authentication? (Network Configuration)
- Did you enter the correct Username and Password for SMTP authentication? (Network Configuration)?

Also be sure to have the latest firmware installed in case you experience difficulties. Possible compatibility problems are likely to be resolved in newer firmware versions.

8. How do I activate the FTP upload function?



( ) send captured image to FTP server
Activate this option.

FTP Server (max 30 characters)
Type in the IP address or domain name of the FTP server (if you enter the domain name, you must have proper DNS servers set up in the network configuration).

FTP Server Port
By default, the FTP service runs on port 21. If your server runs on a different port, you can enter the correct port here.

User ID (max 30 characters)
Enter a valid FTP server user name.

Password (max 30 characters)
Enter a valid FTP server password.

Directory (max 30 characters)
Enter the directory on the server where the images are to be uploaded.

FTP Rename enable
Activate this option if you want the server to rename the image after the upload is completed.

9. What does the FTP Rename option in the Event Trigger Configuration do?

The FTP Rename option should be activated whenever the camera uploads the same image (same image name) to the FTP server. Typically this is an application where the camera uploads still images to your Web site every xx seconds and you display the image on your Web site.

Without the Rename option enabled, the following will happen:
The FTP upload process consists of different steps.
1. Login
2. Delete existing file
3. Upload new file
4. Logout
The entire process can easily take several seconds, depending on the camera's Internet connection speed as well as the image size.

The important thing here is that the existing image first is being deleted, then the new image is being uploaded. If a user accesses your Web site at the very moment the image is deleted or is being uploaded, the image on the Web site will either not show up at all or will only show partially.

With the Rename Option enabled, this does not happen. The image will always show up correctly. Here is why:
Instead of deleting the existing image first, the camera uploads the new image using a different file name.
Example:
Image name: camera.jpg
Image name of file the camera uploads: camera_tmp.jpg

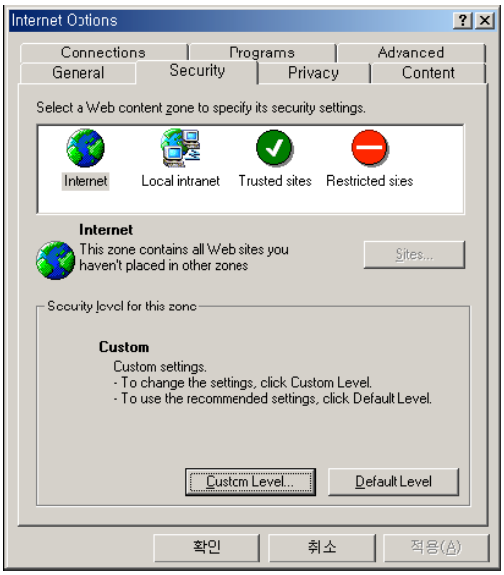
This way, the current image will still show up for Web users even if the camera already uploads a new image. Once the upload of the new image is completed, the camera instructs the FTP server to delete the existing image and rename the new image to the old image. Since this is done on the server itself, this takes only a fraction of a second. Thus, the image on your Web page will always show up correctly.

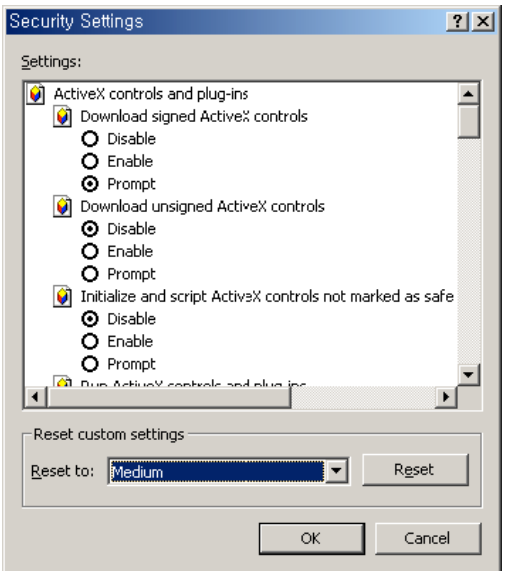
In short:
You should activate the Rename option, if the Network IP Camera refreshes an existing image on the FTP server which can be seen on a Web site.

You do not need to activate the Rename option, if the Network IP Camera uploads a series of images with changing file names (e.g., with the date and time included in the file name).

10. Why won’t the ActiveX control automatically download?
Situations occasionally arise which prohibit this from happening. If Internet Explorer is an earlier version than 4.0, or if the registry information of the system is corrupted, the automatic download and installation may fail. If problems occur with automatic download, try a manual download. (See Installation of ActiveX in 4.3.)

11. Even though I enter the right ID and password to log in, the error message "You must login first" appears. What's wrong?
Open "Internet Options" in MS Internet Explorer and then click on the "Security" tab to view the setting. (If set on "High," ActiveX would have a problem downloading.) You can manually install the ActiveX control as described in section 4.3 or change the security settings to a lower level.





12. I want to connect to the camera using Java; however, on my new Windows system there's no Java Virtual Machine installed. Where do I get it?
You may download the Java software directly from Sun's Java Web site.
Java Virtual Machine for Windows:
http://www.java.com/en/download/windows_manual.jsp

13. I would like to use a professional video monitoring and recording software. Which programs are compatible with the network camera?
A list of compatible programs can be found at:
http://www.networkipcamera.com/solutions-surveillance.php
INTELLINET NETWORK SOLUTIONS does not provide technical support for any of the programs listed on the site.

Appendix B: Accessing the camera via HyperTerminal

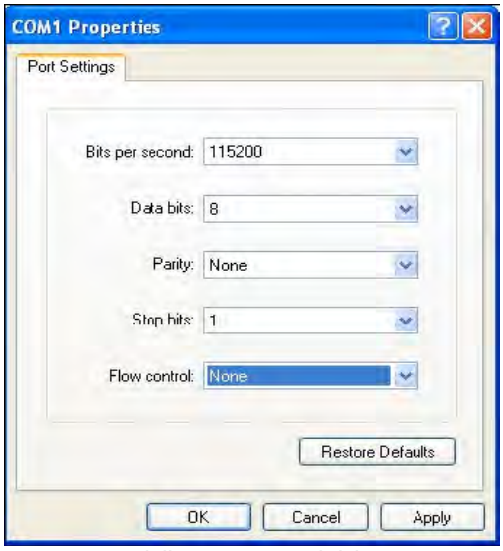
NOTE: **This section is for advanced users only.**

HyperTerminal is a basic program for Windows 9x/NT/2000XP/Vista. A PC can communicate with external devices through the serial port by using this program. The steps you should take to set the HyperTerminal are as follows with a Windows 2000 OS. The camera can be programmed via HyperTerminal, but only a few options are available. Programming the camera via HyperTerminal has no advantage over the installation via IP Installer or the Web browser. However, for diagnostic purposes this access method can be quite useful.

1. Go to Start -> Programs -> Accessories -> Communications ->HyperTerminal. Select one of the icons and then enter an appropriate name in the box.

2. Select a serial port of the PC, then click "OK." (Usually COM1 or COM2 is recommended.)

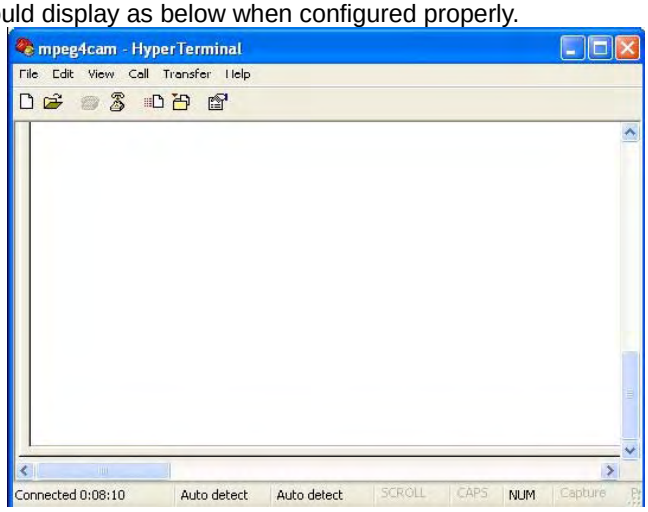
3. Configure the parameters as shown below:



(all MPEG4 models)

(JPG CMOS Camera 550710 uses the following values: 19200 – 8 – None – 1 – None)

4. The window should display as below when configured properly.



You can see real-time messages generated by the camera operating system which can be recorded by going to "Transfer" and clicking "Capture Text." In case of a camera malfunction, you can record this log should the technical support team ask for the information.

Appendix C: Troubleshooting

This appendix provides useful information to help you to resolve any difficulty you might have with your Pro Series Network Camera. Fault symptoms, possible causes and remedial actions are provided within a quick reference table.

PINGing Your IP address
By sending a packet to the specified address and waiting for a reply, the PING (packet Internet grouper) can determine whether a specific IP address is accessible. It also provides a particularly useful method for confirming addressing conflicts with your Pro Series Network Camera on the network.
After disconnecting your camera, follow the instructions below in association with Symptoms, Possible Causes and Remedial Actions and run the PING utility to troubleshoot TCP/IP problems on your network.

1. Start a DOS window
2. Type ping x.x.x.x, where x.x.x.x is the IP address of the camera.
3. The subsequent replies will provide an explanation as to the cause of the problem. Replies can be interpreted as defined in the table below:

PING reply	Interpretation and recommendation
bytes = 32 time = 2 ms	The IP address is already used and cannot be used again. You must obtain a new IP address.
Destination host unreachable	MPEG4 Network Camera is not accessible within your subnet. You must obtain a new IP address.
Request timed out	This IP address is not used by anyone and is available for use with your Pro Series Network Camera.

Symptoms, Possible Causes and Remedial Actions

Symptoms	Possible causes	Remedial actions
The camera cannot be accessed from a Web browser	The IP address is already used by another device	1. Disconnect your camera from the network. 2. Run the PING utility (as described in "PINGing Your IP Address").
	The IP address is located within a different subnet	Run the PING utility (as described in "PINGing Your IP Address"). If the utility returns "no response" or similar, the diagnosis is probably correct — you should then proceed as follows: In Windows 95/98 or Windows 2000/XP/Vista, check that the IP address for your camera is within the same subnet as your workstation: 1. Click "Start," "Settings," "Control Panel" and "Network." 2. Specify the TCP/IP adapter and click on "Properties." In Properties, click "IP address." 3. Check that the first 3 numbers within the IP address of your camera match the first 3 of your workstation. If not, your camera may be on a different subnet and the IP address cannot be set from this workstation. You must set the IP address for the camera from a workstation on the same subnet.
	Other networking problems	Trying replacing your network cable. Test the network interface of the product by connecting a local computer to the unit, using a standard crossover

		(hub-to-hub) cable. If the above actions don't resolve the problem, the camera maybe faulty. In this case, try to localize the problem by connecting the camera to the serial port of a local computer, using the RS-232 cable.
The Power LED is not constantly lit	Faulty power supply	Verify that you are using the provided power supply.
The Network LED is off	Faulty cabling	1. To verify that the cables are functional, PING the address of a known existing unit on your network. 2. If the cabling is okay and your network is reachable, you should receive a reply similar to this: . . . bytes = 32 time = 2 ms,
The Operating Status LED is off	Faulty connection	Verify that the power source is properly connected.
The camera works locally, but not externally	Firewall protection Default routers required The Internet site's too heavily loaded	Check the Internet firewall with your system manager. Check if you need to configure the default router settings. Configure the camera to upload your video images to an FTP server or an ISP.
A series of broad, vertical white lines appears across the image	The CCD sensor becomes overloaded when the light is too bright, as with reflected sunlight	Direct exposure to extreme sunlight or halogen light may cause serious damage to the CCD sensor. Re-position your camera into a more shaded location immediately. ***NOTE:*** Damage caused to a Pro Series Network Camera through over-exposure to direct sunlight or halogen light is not covered under the product warranty.
Bad focus	Focus has not been correctly adjusted	Adjust the camera manually until the image appears clear.
Noisy images	Video images may be noisy if you are using the camera in a very low light environment or the bit rate/quality is set to very low values	Improve the lighting conditions. If this doesn't help and the lighting conditions within the installation area can not be improved, consider replacing the basic lens with a more sensitive lens. Set the quality/bit rate to a higher value.
Bad-quality video	The display properties are incorrectly configured for your desktop The camera is not focused correctly	Open the display properties on your desktop and configure your display to show at least 65,000 colors; i.e., at least 16-bit. ***NOTE:*** Using only 16 or 256 colors on your computer will produce dithering artifacts in the image. Adjust the camera lens manually.

NOTE: If you still have a problem with your camera after following the above recommendations, contact your dealer or check the INTELLINET ACTIVE NETWORKING Web site: http://www.networkipcamera.com.

Appendix D: Utilizing IP Addresses on a Local Network

Introduction
Access to the Internet is achieved via Internet IP addresses. Currently, IP addresses are limited. There are five classes of networks, and each network contains IP addresses. A network can only hold a limited number of IP addresses, and the number of IP addresses depends on the network class. The five classes are labeled "A" through "E," with the most common one being the "C"-class network.

IP Construction and Network Class
IP Construction

xxx X1	xxx X2	xxx X3	xxx X4	(xxx: 0-255) e.g., 192.168.1.1

Network Class
A Class: A network that contains IP addresses from 0 to 127 at room "X1."
Network ID: X1
Host ID: X2, X3, X4
There are 128 A-Class networks in the world.

B Class: A network that contains IP addresses from 128 to 172 at room "X1."
Network ID: X1, X2
Host ID: X3, X4
There are 65,534 B-Class networks in the world.

C Class: A network that contains IP addresses from 192 to 223 at room "X1."
Network ID: X1, X2, X3
Host ID: X4
The most common network; there are 2,097,152 C-class networks in the world.

D Class: A network that contains IP addresses from 224 to 239 at room "X1." D-class networks are used for multicasting, and are not allowed for common use.
E Class: A network that contains IP addresses from 240 to 255 at room "X1." E-class networks are reserved.

C-Class Networks
Features of Addresses
IP address: The three-digit number in room "X4" is for the Host ID. The number range is from 0 to 255. Among the numbers, 0 is used for Network ID, 1 is used for Router IP (gateway address) and 255 is used for a broadcast address. The numbers from 2 to 244 are IP addresses that can be assigned to a Pro Series Network Camera, PC, etc.
Network ID: Identifies a network. Generally the first number assigned is Network ID.
Gateway address: The IP address of the router for connecting the Internet and a local network.
Broadcast address: The IP address for broadcasting. All devices connected on a local network have the same broadcast address.
Subnet mask: Divides a local network into two remote networks and shows the IP quantity in a certain network. The number used as a subnet mask is limited: 0, 4, 8, 16, 32, 64, 128.

Network Configuration
1. To use as one network
Network ID: xxx.xxx.xxx.0
Gateway Address: xxx.xxx.xxx.1

Subnet Mask: 255.255.255.0
Broadcast Address: xxx.xxx.xxx.255
IP addresses: xxx.xxx.xxx.2 - xxx.xxx.xxx.254

2. To use as two sub-networks (1/2 + 1/2)
Sub-Network ID: xxx.xxx.xxx.0
Gateway Address: xxx.xxx.xxx.1
Subnet Mask: 255.255.255.128
Broadcast Address: xxx.xxx.xxx.127
IP addresses: xxx.xxx.xxx.2 - xxx.xxx.xxx.126
Sub-Network ID: xxx.xxx.xxx.128
Gateway Address: xxx.xxx.xxx.129
Subnet Mask: 255.255.255.128
Broadcast Address: xxx.xxx.xxx.255
IP addresses: xxx.xxx.xxx.130 - xxx.xxx.xxx.254

3. To use as three sub-networks (1/4 + 1/4 + 1/2)
Sub-Network ID: xxx.xxx.xxx.0
Gateway Address: xxx.xxx.xxx.1
Subnet Mask: 255.255.255.192
Broadcast Address: xxx.xxx.xxx.63
IP addresses: xxx.xxx.xxx.2 - xxx.xxx.xxx.62
Sub-Network ID: xxx.xxx.xxx.64
Gateway Address: xxx.xxx.xxx.65
Subnet Mask: 255.255.255.192
Broadcast Address: xxx.xxx.xxx.127
IP addresses: xxx.xxx.xxx.66 - xxx.xxx.xxx.126
Sub-Network ID: xxx.xxx.xxx.128
Gateway Address: xxx.xxx.xxx.129
Subnet Mask: 255.255.255.128
Broadcast Address: xxx.xxx.xxx.225
IP addresses: xxx.xxx.xxx.130 - xxx.xxx.xxx.256

4. To use as four sub-networks (1/4 + 1/4 + 1/4 + 1/4)
Sub-Network ID: xxx.xxx.xxx.0
Gateway Address: xxx.xxx.xxx.1
Subnet Mask: 255.255.255.192
Broadcast Address: xxx.xxx.xxx.63
IP addresses: xxx.xxx.xxx.2 - xxx.xxx.xxx.62

Sub-Network ID: xxx.xxx.xxx.64
Gateway Address: xxx.xxx.xxx.65
Subnet Mask: 255.255.255.192
Broadcast Address: xxx.xxx.xxx.127
IP addresses: xxx.xxx.xxx.66 - xxx.xxx.xxx.126

Sub-Network ID: xxx.xxx.xxx.128
Gateway Address: xxx.xxx.xxx.129
Subnet Mask: 255.255.255.192
Broadcast Address: xxx.xxx.xxx.191
IP addresses: xxx.xxx.xxx.130 - xxx.xxx.xxx.190

Sub-Network ID: xxx.xxx.xxx.192
Gateway Address: xxx.xxx.xxx.193
Subnet Mask: 255.255.255.192
Broadcast Address: xxx.xxx.xxx.255
IP addresses: xxx.xxx.xxx.194 - xxx.xxx.xxx.254

Appendix E: Updating Firmware

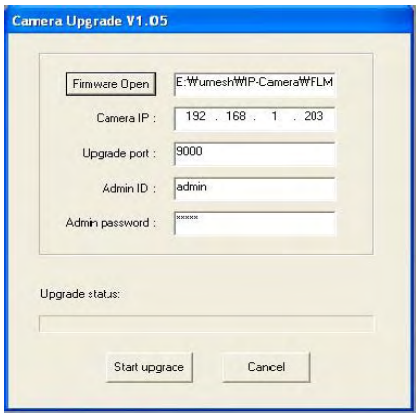
CAUTION: The process for updating current firmware is already installed in your camera. If you begin the process, follow the manual instructions. During the process, do not disconnect the network or power source, and avoid any physical shock to the camera. Otherwise, the camera can be seriously damaged and fail to function properly. If firmware fails to update, or if the camera does not operate properly after a firmware update, contact your local dealer.

Identify the Version of Firmware
You can identify the version of the camera's firmware on the System Configuration page. (You can check the version of your camera firmware first and then try to update.) To check the present version of firmware, go to the camera's homepage and click "Administrator Tools"; then go to the System Configuration page and check the version of the firmware.

Download New Firmware
You can download the latest firmware software through the Internet at the INTELLINET NETWORK SOLUTIONS support Web site: www.networkipcamera.com.

Install New Firmware

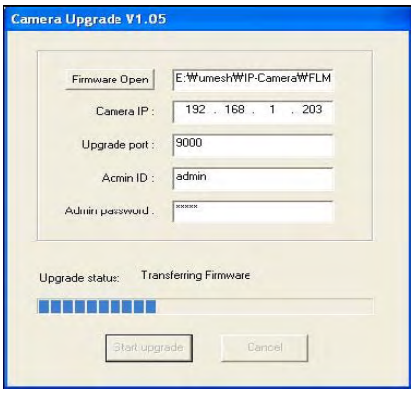
Camera firmware can be upgraded via the LAN or remotely over the Internet.



1. Confirm that the camera is connected to your PC. (As long as you can access your camera homepage, you can process an upgrade.)

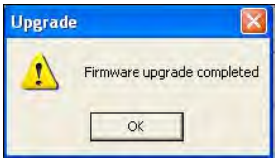
2. Execute the newly updated firmware and select the firmware file via the "Firmware Open" button.

3. Enter the camera's IP address, upgrade port number, admin ID and password configured on the Network Configuration page. Then click on "Start upgrade." You may see the upgrading status. Upgrading levels are divided into four steps, from "Transferring Firmware" to "Verifying flash memory." (Each step is indicated on a progress bar.)



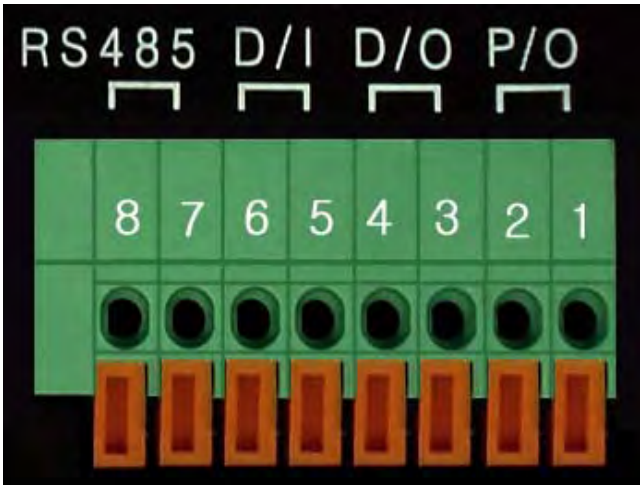
4. When completed upgrading, a message appears that indicates the upgrade has been completed. Click the "OK" button.

NOTE: If you receive the warning "INVALID HEADER MARKER" during the firmware upgrade, restart your computer in safe mode with networking support and repeat the procedure.



Appendix F: The I/O Connector (MPEG4 Cameras)

The I/O Connector provides the physical interface to a digital output and a single digital, photo-coupled input that is used for connecting a variety of external alarm devices to the Pro Series Network Camera, including infrared sensors, switches and alarm relays.
In combination with the configurable alarm facilities, you can quickly develop a variety of security applications that are triggered on time- or alarm-based events.



No.	Function	Description
1	Power GND (-)	Power for the external I/O devices (-)
2	Power DC12V (+)	Power for the external I/O devices (+)
3	Digital Out (+)	Output for the external output devices (+)
4	Digital Out GND (-)	Output for the external output devices (-)
5	Digital In (+)	Input to the external Input devices (+)
6	Digital In GND (-)	Input to the external input devices (-)
7	RS-485 (+)	Not in use
8	RS-485 (-)	Not in use

1-2 PIN
To supply external devices with power. PIN 1 is connected to the GND terminal of a device's power and PIN 2 is connected to the positive (+) terminal. However, the external device should be less than 12 V DC and 200 mA. This is a permanent 12 V DC power source.

3-4 PIN
To supply external devices with power. PIN 4 is connected to the GND terminal of a device's power and PIN 3 is connected to the positive (+) terminal. However, the external device should be less than 12 V DC and 200 mA. Power is only provided if an alert state has occurred in the Event Trigger Configuration (see section 6.5).

5-6 PIN
PIN 5 and PIN 6 are connected to the signal output terminal of an external input device, such as an IR or alarm sensor.

Appendix G: Dynamic Domain Name System (DDNS)

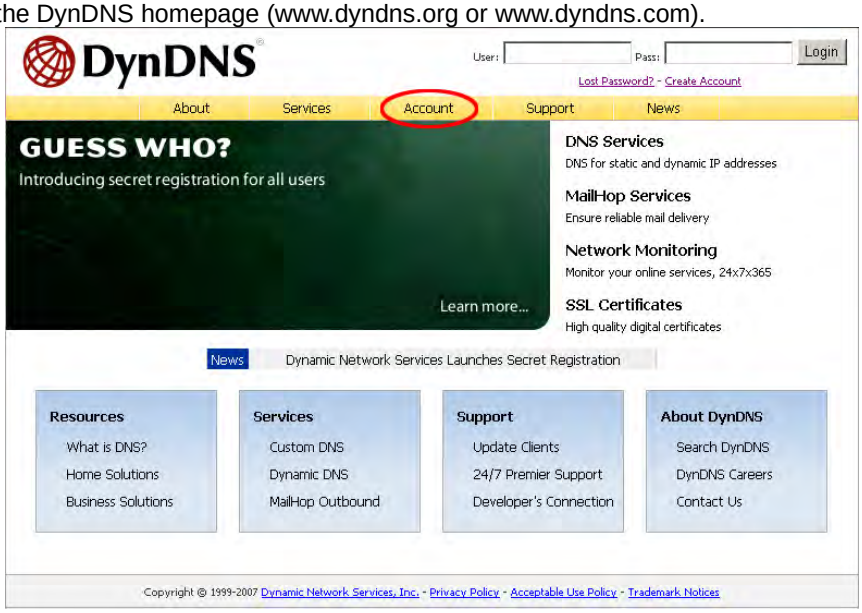
Your Internet service provider (ISP) provides you with at least one IP address that you use to connect to the Internet. The address you get may be static, meaning it never changes, or dynamic, meaning it's likely to change periodically. Just how often it changes depends on your ISP. A dynamic IP address complicates remote access since you may not know what your current WAN IP address is when you want to access your network over the Internet. The solution to the dynamic IP address problem comes in the form of a dynamic DNS service.

The Internet uses DNS servers to look up domain names and translates them into IP addresses. Domain names, such as www.intellinet-network.com, are just easy-to-remember aliases for IP addresses. A dynamic DNS service is unique because it provides a means of updating your IP address so that your listing will remain current when your IP address changes.
There are several excellent DDNS services available on the Internet and, best of all, some of them free to use. The INTELLINET NETWORK SOLUTIONS Network Cameras support the DDNS service provided by www.DynDNS.org.
You'll need to register with the service and set up the domain name of your choice to begin using it. Please refer to the homepage or the service for detailed instructions.

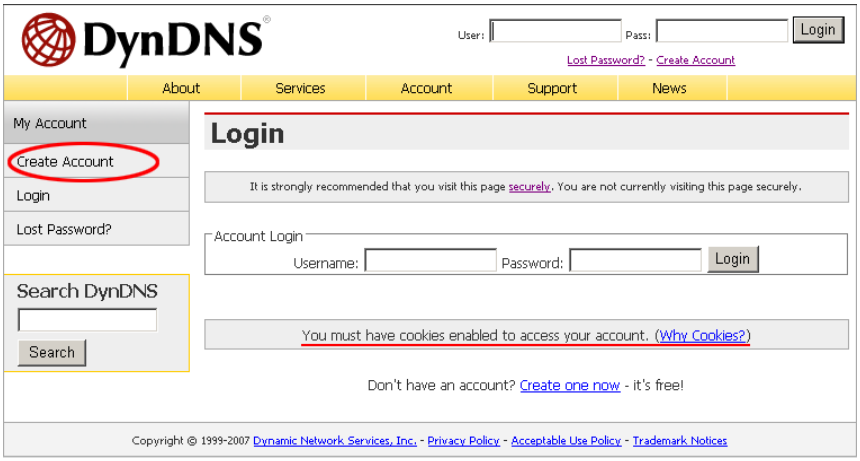
A DDNS service works by uploading your WAN IP address to its servers periodically. Your gateway/router may support DDNS directly, in which case you can enter your DDNS account information into your router and it will update the DDNS servers automatically when your IP address changes. Consult your router's documentation for more information. If your router does not support DDNS, you can run a small client utility on any PC on your network that will perform the updating. The client utility is usually provided for free by the service. Check the service's Web page for further information, terms and conditions.

How to Use the DynDNS DDNS Server

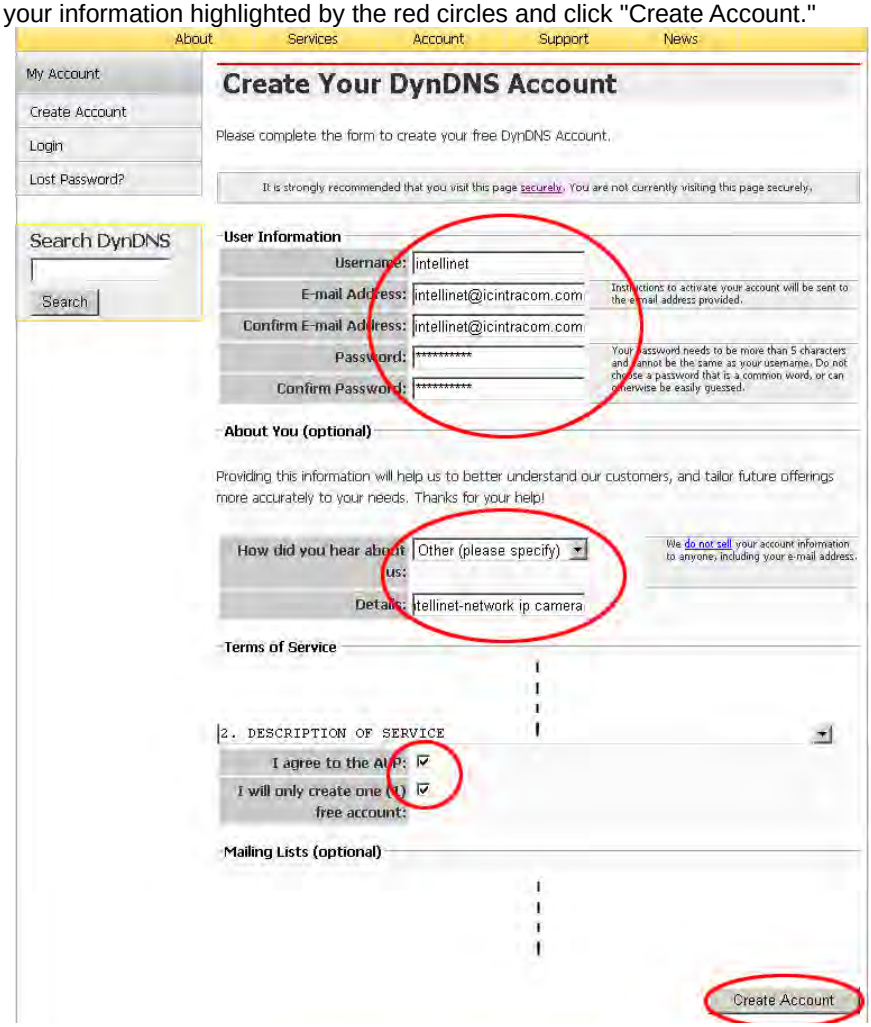
1. Go to the DynDNS homepage (www.dyndns.org or www.dyndns.com).



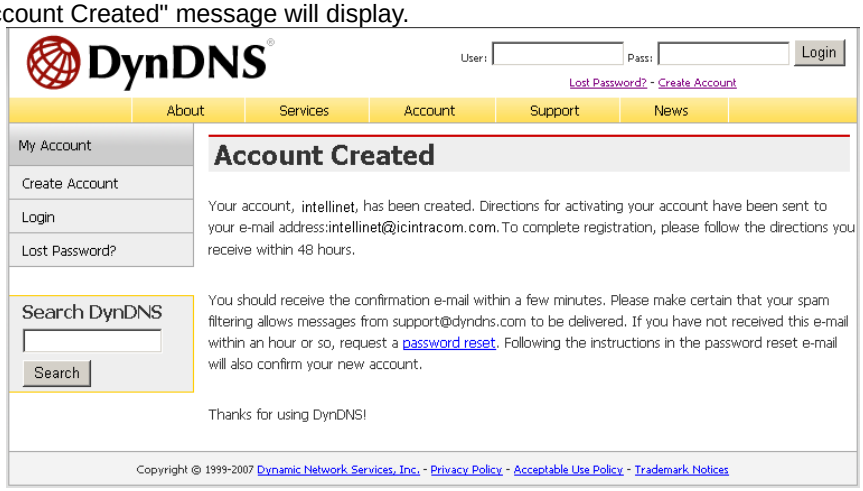
2. If you didn't register your ID, click "Create Account" and register your ID. Or, just log in with a registered ID.
***NOTE*:** Read and follow the instructions about cookies!



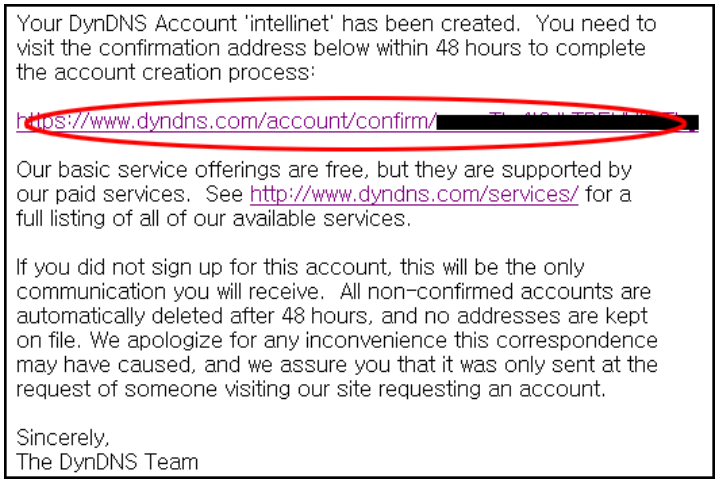
3. Enter your information highlighted by the red circles and click "Create Account."


About
Services
Account
Support
News
My Account
Create Account
Login
Lost Password?
Search DynDNS
Search
Create Your DynDNS Account
Please complete the form to create your free DynDNS Account.
It is strongly recommended that you visit this page securely. You are not currently visiting this page securely.
User Information
Username: intellinet
E-mail Address: intellinet@icintracom.com
Instructions to activate your account will be sent to the e-mail address provided.
Confirm E-mail Address: intellinet@icintracom.com
Password: **********
Confirm Password: **********
Your password needs to be more than 5 characters and cannot be the same as your username. Do not choose a password that is a common word, or can otherwise be easily guessed.
About You (optional)
Providing this information will help us to better understand our customers, and tailor future offerings more accurately to your needs. Thanks for your help!
How did you hear about us: Other (please specify)
We do not sell your account information to anyone, including your e-mail address.
Details: intellinet-network ip camera
Terms of Service
2. DESCRIPTION OF SERVICE
I agree to the AUP:
I will only create one (1) free account:
Mailing Lists (optional)
Create Account

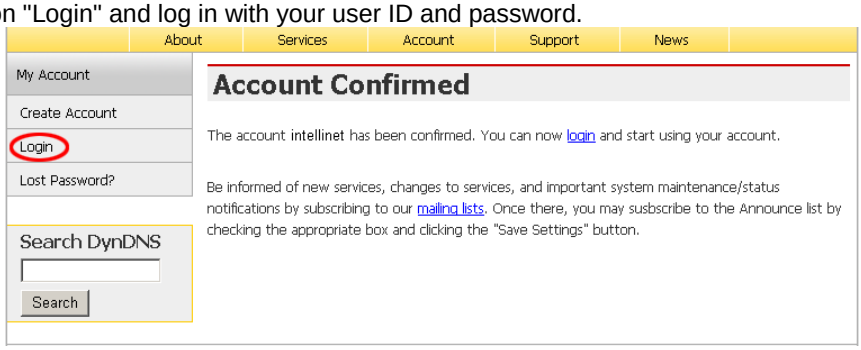
4. An "Account Created" message will display.


DynDNS
User:
Pass:
Login
Lost Password? - Create Account
About
Services
Account
Support
News
My Account
Create Account
Login
Lost Password?
Search DynDNS
Search
Account Created
Your account, intellinet, has been created. Directions for activating your account have been sent to your e-mail address:intellinet@icintracom.com. To complete registration, please follow the directions you receive within 48 hours.
You should receive the confirmation e-mail within a few minutes. Please make certain that your spam filtering allows messages from support@dyndns.com to be delivered. If you have not received this e-mail within an hour or so, request a password reset. Following the instructions in the password reset e-mail will also confirm your new account.
Thanks for using DynDNS!
Copyright © 1999-2007 Dynamic Network Services, Inc. - Privacy Policy - Acceptable Use Policy - Trademark Notices

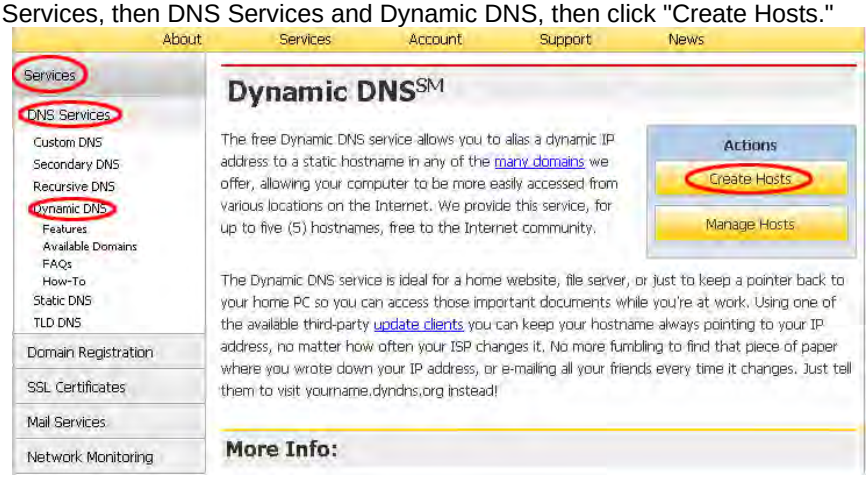
5. You will receive an e-mail as shown bellow. Click the confirmation URL circled in red.


Your DynDNS Account 'intellinet' has been created. You need to visit the confirmation address below within 48 hours to complete the account creation process:
https://www.dyndns.com/account/confirm/[redacted]
Our basic service offerings are free, but they are supported by our paid services. See http://www.dyndns.com/services/ for a full listing of all of our available services.
If you did not sign up for this account, this will be the only communication you will receive. All non-confirmed accounts are automatically deleted after 48 hours, and no addresses are kept on file. We apologize for any inconvenience this correspondence may have caused, and we assure you that it was only sent at the request of someone visiting our site requesting an account.
Sincerely,
The DynDNS Team

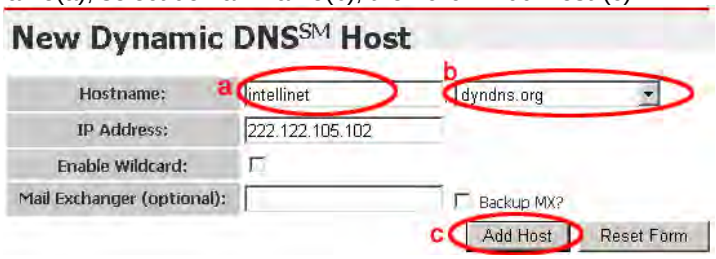
6. Click on "Login" and log in with your user ID and password.


About
Services
Account
Support
News
My Account
Create Account
Login
Lost Password?
Search DynDNS
Search
Account Confirmed
The account intellinet has been confirmed. You can now login and start using your account.
Be informed of new services, changes to services, and important system maintenance/status notifications by subscribing to our mailing lists. Once there, you may susbscribe to the Announce list by checking the appropriate box and clicking the "Save Settings" button.

7. Go to Services, then DNS Services and Dynamic DNS, then click "Create Hosts."


About
Services
Account
Support
News
Services
DNS Services
Custom DNS
Secondary DNS
Recursive DNS
Dynamic DNS
Features
Available Domains
FAQs
How-To
Static DNS
TLD DNS
Domain Registration
SSL Certificates
Mail Services
Network Monitoring
Dynamic DNSSM
The free Dynamic DNS service allows you to alias a dynamic IP address to a static hostname in any of the many domains we offer, allowing your computer to be more easily accessed from various locations on the Internet. We provide this service, for up to five (5) hostnames, free to the Internet community.
Actions
Create Hosts
Manage Hosts
The Dynamic DNS service is ideal for a home website, file server, or just to keep a pointer back to your home PC so you can access those important documents while you're at work. Using one of the available third-party update clients you can keep your hostname always pointing to your IP address, no matter how often your ISP changes it. No more fumbling to find that piece of paper where you wrote down your IP address, or e-mailing all your friends every time it changes. Just tell them to visit yourname.dyndns.org instead!
More Info:

8. Enter a Hostname(a), select domain name(b), then click "Add Host"(c).



9. After successful registration, the registered information will be displayed.

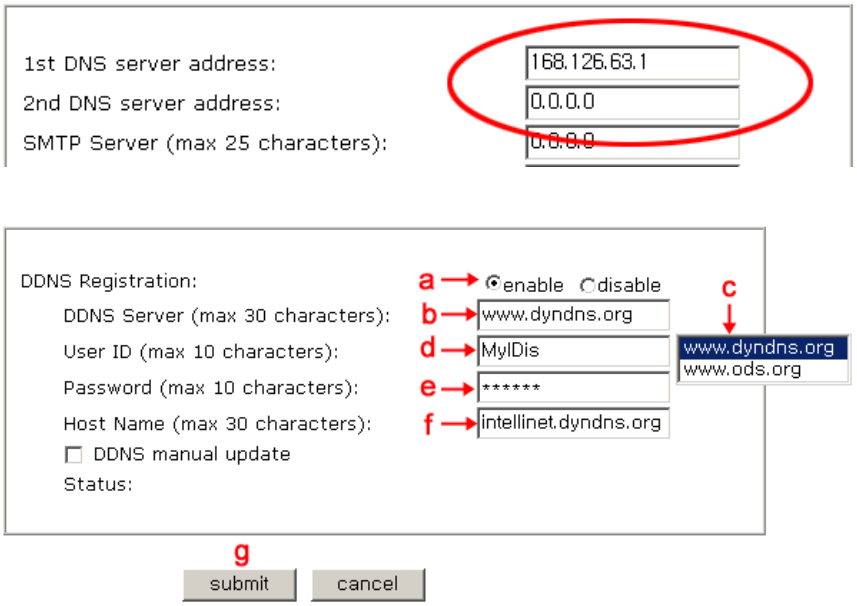
Hostname Created
Dynamic DNS Home
The hostname you have requested has been created. The information now in the database and DNS system is:
Hostname: intellinet.dyndns.org
IP Address: 222.122.105.102
Wildcard: N
Mail Exchanger: None
Backup MX: N

***NOTE*:** After the DDNS registration is completed, enter the DDNS settings for the camera.

DDNS Registration for the Pro Series Network Camera

1. After setting up ODS or DynDNS, open the Network Configuration page of the administrator menu.

2. Enter at least one DNS server.



3. In the DDNS Registration section,
   a. Click "enable"
   b. Click on the DDNS Server field
   c. Select the DDNS server (ODS or DynDNS) you want
   d. Fill in your registered user ID
   e. Fill in your registered password
   f. Fill in the host name
   g. Click "submit"

3. If the registration is successful, you will see "Registration Success" in the "Status" area after several seconds; otherwise, check your registered information or network connection status.

4. When registration is complete, you can connect to the camera using the domain that you registered.

Appendix H: Reinstating the Factory Default Settings

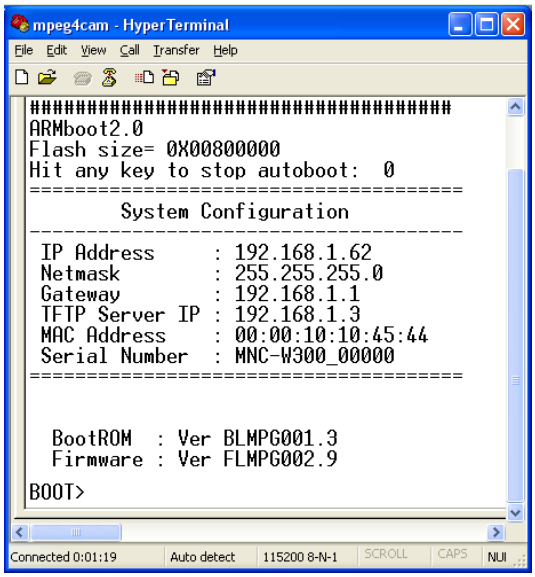
This information details how to set the default settings for the Pro Series Network Camera. In certain circumstances, it may be necessary to restart or reinstate the factory default settings for your camera. This is done by pressing the Reset button or by using HyperTerminal settings.

Pressing the Reset Button

1. Using a paper clip or any sharp pin, press the Reset button on the back of the camera.
2. Switch off the camera by disconnecting the power cable.
3. While pressing the Reset button, reconnect the power supply cable. Keep the Reset button pressed until the green Operating Status LED blinks three times (this may take 10 to 15 seconds). Release the Reset button.

Using HyperTerminal

1. Run "HyperTerminal" (see 4.3.1).
2. Supply power to the camera.
3. After a few moments, the countdown begins with the prompt "Press any key to stop auto booting within 3 seconds..." Press any key to display the screen below.



When you enter "Set," the administrator ID and password reinstate as factory default "admin."

***NOTE*:** Reinstating the original default settings will cause all parameters (including IP address) to be reset.

Factory default settings

Administrator ID: admin
Administrator password: admin
Guest ID: guest
Guest password: guest
IP address: 192.168.1.221
Subnet mask address: 255.255.255.0
Gateway address: 192.168.1.1
Server IP address: 192.168.1.5

Appendix I: Glossary of Terms

ActiveX - A control (or set of rules) used by a browser. ActiveX controls are often downloaded and installed automatically as required.

ARP - Address Resolution Protocol. A method for finding a host's Ethernet address from its Internet address. The sender broadcasts an ARP packet containing the Internet address of another host and waits for it (or some other host) to send back its Ethernet address. Each host maintains a cache of address translations to reduce delay and loading. ARP allows the Internet address to be independent of the Ethernet address, but it only works if all hosts support it. The ARP command can be used to set the IP addresses for your product.

CGI - Common Gateway Interface. A standard for running external programs from a World Wide Web HTTP server. CGI specifies how to pass arguments to the executing program as part of the HTTP request. It also defines a set of environment variables. Commonly, the program will generate some HTML that will be passed back to the browser, but it can also request URL redirection. Basically, it's a set of rules (or a program) that allows a Web server to communicate with other programs.

DSL - Digital Subscriber Loop. A family of digital telecommunications protocols designed to allow high-speed data communication over the existing copper telephone lines between end-users and telephone companies.

DHCP - A protocol that provides a means to dynamically allocate IP addresses to computers on a local area network. The system administrator assigns a range of IP addresses to a DHCP, and each client computer on the LAN has its TCP/IP software configured to request an IP address from the DHCP server. The request and grant process uses a lease concept with a controllable time period.

Ethernet - A widely used networking standard.

Firewall - A virtual barrier between a LAN (Local Area Network) and other networks; e.g., the Internet.

Frame Grabber Card - Plug-in hardware for "grabbing" images.

FTP - A client-server protocol that allows a user on one computer to transfer files to and from another computer over a TCP/IP network. Also, the client program the user executes to transfer files. It is defined in STD 9, RFC 959.

HTML - A markup language used to structure text and multimedia documents and to set up hypertext links between documents, used extensively on the World Wide Web.

HTTP - A protocol used to request and transmit files, especially Web pages.

Intranet - A privately maintained computer network that can be accessed only by authorized persons, especially members or employees of the organization that owns it.

IP - Internet Protocol. The network layer for the TCP/IP protocol suite widely used on Ethernet networks, defined in STD 5, RFC 791. IP is a connectionless, best-effort packet switching protocol. It provides packet routing, fragmentation and re-assembly through the data link layer.

IP number (address) - A unique number used by a computer on the network to allow it to be identified and found.

JPEG - A standard image format, used widely for photographs. Also known as JPG.

LAN - Local Area Network. A data communications network which is geographically limited (typically to a 1 km radius), allowing easy interconnection of terminals, microprocessors and computers within adjacent buildings. Ethernet and FDDI are examples of standard LANs.

PING - A protocol that sends a message to another computer and waits for acknowledgment, often used to check if another computer on a network is reachable.

PPP - Point to Point Protocol. A method allowing one computer to connect to another, usually via a modem over a phone line.

Protocol - A set of formal rules describing how to transmit data, especially across a network. Low-level protocols define the electrical and physical standards to be observed, bit- and byte-ordering and the transmission and error detection and correction of the bit stream. High-level protocols deal with the data formatting, including the syntax of messages, the terminal to computer dialogue, character sets, sequencing of messages, etc.

SMTP - Simple Mail Transfer Protocol.

TCP/IP - Transmission Control Protocol/Internet Protocol. The wide-area-networking protocol that makes the Internet work. TCP/IP is used on many networks, including the Internet. TCP keeps track of the individual packets of information and IP contains the rules for how the packets are actually sent and received.

URL - Uniform Resource Locator. An "address" on the network.

WAN - Wide Area Network. A communications network that uses such devices as telephone lines, satellite dishes or radio waves to span a larger geographic area than can be covered by a LAN.

Wizard - A program designed specifically to guide the user through a procedure. Typically used for installation and configuration. InstallShield Wizard is required to download ActiveX manually.

Appendix J: Product Specifications

Pro Series Network Camera 550796
MPEG4, CCD, Day/Night, PAL

Standards
• IEEE 802.3 (10Base-T Ethernet)
• IEEE 802.3u (100Base-TX Fast Ethernet)
• IEEE 802.3af (Power over Ethernet)

General
• 32-bit ARM9 RISC CPU
• 16 MByte video frame buffer
• 8 MByte flash memory
• 32 MByte SDRAM
• Supported image resolutions: D1 (720 x 576), CIF (352 x 288)
• Audio support:
  - Full duplex
  - Bandwidth: 300 Hz to 3.4 kHz
  - Audio input: 3.5 mm / 1.8" microphone input jack
  - Audio output: 3.5 mm / 1.8" speaker output jack
• Protocols supported: TCP/IP, UDP, HTTP, HTTPS, FTP, SMTP, DHCP, DNS, ARP, ICMP, RTSP, RTC
• Certifications: FCC Class B, RF: EN300328, EMC: EN301489-1/-7, Safety: EN60950-1

Image Sensor and Lens Specification
• 1/3" SONY Super HAD CCD sensor
• S/N ratio: > 48 dB
• Video output: 1.0 Vp-p (75 Ohms, composite)
• Automatic white balance control
• Image Control, Brightness, Contrast, Saturation, Hue
• 0.1 minimum lux
• Electronic shutter: 1/50 - 1/10.000 sec.
• Replaceable standard 1/3" CS mount lens
• Focal length 6.0 mm, angular field of view 54˚, object distance 0.1 m to infinity
• Maximum relative aperture F1.8

LEDs
• Power
• Network connection
• Camera operation

Environmental
• Dimensions: 87 (W) x 158 (L) x 45 (H) mm (3.4 x 6.2 x 1.8 in.)
• Weight: 1.1 kg (2.34 lbs.)
• Operating temperature: 0 – 50°C (32 – 122°F)
• Operating humidity: 10 – 95% RH, non-condensing
• Storage temperature: 0 – 60°C (0 – 149°F)

Power
• External power adapter: 12 V DC, 1.5 A
• Power consumption: 3.0 Watts (maximum)

System Requirements
• Windows 2000, XP, Vista, Linux, Mac OS X
• Computer with network connection
• Web browser support:
  - MS Internet Explorer 5.0 or higher (ActiveX + Java)
  - Mozilla 1.x, Mozilla Firefox (Java)
  - Netscape Navigator 6.0 or higher (Java)
  - Opera (Java)
  - Safari (Java)
  - Konqueror (Java)

Pro Series Network Camera 503181
MPEG4, CCD, Day/Night, NTSC

Standards
• IEEE 802.3 (10Base-T Ethernet)
• IEEE 802.3u (100Base-TX Fast Ethernet)
• IEEE 802.3af (Power over Ethernet)

General
• 32-bit ARM9 RISC CPU
• 16 MByte video frame buffer
• 8 MByte flash memory
• 32 MByte SDRAM
• Supported image resolutions: D1 (720 x 480), CIF (320 x 240)
• Audio support:
  - Full duplex
  - Bandwidth: 300 Hz to 3.4 KHz
  - Audio input: 3.5 mm / 1.8" microphone input jack
  - Audio output: 3.5 mm / 1.8" speaker output jack
• Protocols supported: TCP/IP, UDP, HTTP, HTTPS, FTP, SMTP, DHCP, DNS, ARP, ICMP, RTSP, RTC
• Certifications: FCC Class B, RF: EN300328, EMC: EN301489-1/-7, Safety: EN60950-1

Image Sensor and Lens Specification
• 1/3" SONY Super HAD CCD sensor
• S/N ratio: > 48 dB
• Video output: 1.0 Vp-p (75 Ohms, composite)
• Automatic white balance control
• Image Control, Brightness, Contrast, Saturation, Hue
• 0.1 minimum lux
• Electronic shutter: 1/60 – 1/10.000 sec.
• Replaceable standard 1/3" CS mount lens
• Focal length 6.0 mm, angular field of view 54˚, object distance 0.1 m to infinity
• Maximum relative aperture F1.8

LEDs
• Power
• Network connection
• Camera operation

Environmental
• Dimensions: 87 (W) x 158 (L) x 45 (H) mm (3.4 x 6.2 x 1.8 in.)
• Weight: 1.1 kg (2.34 lbs.)
• Operating temperature: 0 – 50°C (32 – 122°F)
• Operating humidity: 10 – 95% RH, non-condensing
• Storage temperature: 0 – 60°C (0 – 149°F)

Power
• External power adapter: 12 V DC, 1.5 A
• Power consumption: 3.0 Watts (maximum)

System Requirements
• Windows 2000, XP, Vista, Linux, Mac OS X
• Computer with network connection
• Web browser support:
  - MS Internet Explorer 5.0 or higher (ActiveX + Java)
  - Mozilla 1.x, Mozilla Firefox (Java)
  - Netscape Navigator 6.0 or higher (Java)
  - Opera (Java)
  - Safari (Java)
  - Konqueror (Java)

Pro Series Wireless Network Camera 550178
MPEG4, CCD, Day/Night, PAL

Standards
• IEEE 802.11b (11 Mbps Wireless LAN)
• IEEE 802.11g (54 Mbps Wireless LAN)
• IEEE 802.3 (10Base-T Ethernet)
• IEEE 802.3u (100Base-TX Fast Ethernet)
• IEEE 802.3af (Power over Ethernet)

General
• 32-bit ARM9 RISC CPU
• 16 MByte video frame buffer
• 8 MByte flash memory, 32 MByte SDRAM
• Supported image resolutions: D1 (720 x 576), CIF (352 x 288)
• Audio support:
  - Full duplex
  - Bandwidth: 300 Hz to 3.4 KHz
  - Audio input: 3.5 mm / 1.8" microphone input jack
  - Audio output: 3.5 mm / 1.8" speaker output jack
• Protocols supported: TCP/IP, UDP, HTTP, HTTPS, FTP, SMTP, DHCP, DNS, ARP, ICMP, RTSP, RTC
• Certifications: FCC Class B, RF: EN300328, EMC: EN301489-1/-7, Safety: EN60950-1

Wireless
• Data rates:
  - IEEE 802.11b (11 Mbps, 5.5 Mbps, 2 Mbps, 1 Mbps)
  - IEEE 802.11g (54 Mbps, 48 Mbps, 36 Mbps, 24 Mbps, 18 Mbps, 12 Mbps, 9 Mbps, 6 Mbps)
• Data encryption: WEP (64-bit & 128-bit), WPA- and WPA2-PSK (with TKIP and AES
• Antenna: single detachable dipole antenna with RP-SMA connector, 2 dBi gain
• Operation modes: Infrastructure, Ad Hoc
• Preamble modes: long, short, auto

Image Sensor and Lens Specification
• 1/3" SONY Super HAD CCD sensor
• S/N ratio: > 48 dB
• Video output: 1.0 Vp-p (75 Ohms, composite)
• Automatic white balance control
• Image Control, Brightness, Contrast, Saturation, Hue
• 0.1 minimum lux
• Electronic shutter: 1/50 – 1/10,000 sec.
• Replaceable standard 1/3" CS mount lens
• Focal length 6.0 mm, angular field of view 54˚, object distance 0.1 m to infinity
• Maximum relative aperture F1.8

LEDs
• Power
• Network connection
• Camera operation

Environmental
• Dimensions: 87 (W) x 158 (L) x 45 (H) mm (3.4 x 6.2 x 1.8 in.)
• Weight: 1.1 kg (2.34 lbs.)
• Operating temperature: 0 – 50°C (32 – 122°F)
• Operating humidity: 10 – 95% RH, non-condensing
• Storage temperature: 0 – 60°C (0 – 149°F)

Power
• External power adapter: 12 V DC, 1.5 A
• Power consumption: 3.0 Watts (maximum)

System Requirements
• Windows 2000, XP, Vista, Linux, Mac OS X
• Computer with network connection
• Web browser support:
  - MS Internet Explorer 5.0 or higher (ActiveX + Java)
  - Mozilla 1.x, Mozilla Firefox (Java)
  - Netscape Navigator 6.0 or higher (Java)
  - Opera (Java)
  - Safari (Java)
  - Konqueror (Java)

Pro Series Wireless Network Camera 550253
MPEG4, CCD, Day/Night, NTSC

Standards
• IEEE 802.11b (11 Mbps Wireless LAN)
• IEEE 802.11g (54 Mbps Wireless LAN)
• IEEE 802.3 (10Base-T Ethernet)
• IEEE 802.3u (100Base-TX Fast Ethernet)
• IEEE 802.3af (Power over Ethernet)

General
• 32-bit ARM9 RISC CPU
• 16 MByte video frame buffer
• 8 MByte flash memory
• 32 MByte SDRAM
• Supported image resolutions: D1 (720 x 480), CIF (320 x 240)
• Audio support:
  - Full duplex
  - Bandwidth: 300 Hz to 3.4 kHz
  - Audio input: 3.5 mm / 1.8" microphone input jack
  - Audio output: 3.5 mm / 1.8" speaker output jack
• Protocols supported: TCP/IP, UDP, HTTP, HTTPS, FTP, SMTP, DHCP, DNS, ARP, ICMP, RTSP, RTC
• Certifications: FCC Class B, RF: EN300328, EMC: EN301489-1/-7, Safety: EN60950-1

Wireless
• Data rates:
  - IEEE 802.11b (11 Mbps, 5.5 Mbps, 2 Mbps, 1 Mbps)
  - IEEE 802.11g (54 Mbps, 48 Mbps, 36 Mbps, 24 Mbps, 18 Mbps, 12 Mbps, 9 Mbps, 6 Mbps)
• Antenna: single detachable dipole antenna with RP-SMA connector, 2 dBi gain
• Operation modes: Infrastructure, Ad Hoc
• Preamble modes: long, short, auto

Image Sensor and Lens Specification
• 1/3" SONY Super HAD CCD sensor
• S/N ratio: > 48 dB
• Video output: 1.0 Vp-p (75 Ohms, composite)
• Automatic white balance control
• Image Control, Brightness, Contrast, Saturation, Hue
• 0.1 minimum lux
• Electronic shutter: 1/60 – 1/10,000 sec.
• Replaceable standard 1/3" CS mount lens
• Focal length 6.0 mm, angular field of view 54˚, object distance 0.1 m to infinity
• Maximum relative aperture F1.8

LEDs
• Power
• Network connection
• Camera operation

Environmental
• Dimensions: 87 (W) x 158 (L) x 45 (H) mm (3.4 x 6.2 x 1.8 in.)
• Weight: 1.1 kg (2.34 lbs.)
• Operating temperature: 0 – 50°C (32 – 122°F)
• Operating humidity: 10 – 95% RH, non-condensing
• Storage temperature: 0 – 60°C (0 – 149°F)

Power
• External power adapter: 12 V DC, 1.5 A
• Power consumption: 3.0 Watts (maximum)

System Requirements
• Windows 2000, XP, Vista, Linux, Mac OS X
• Computer with network connection
• Web browser support:
  - MS Internet Explorer 5.0 or higher (ActiveX + Java)
  - Mozilla 1.x, Mozilla Firefox (Java)
  - Netscape Navigator 6.0 or higher (Java)
  - Opera (Java)
  - Safari (Java)
  - Konqueror (Java)

Pro Series Night Vision Network Camera 550291
MPEG4, CCD, Day/Night, IR Lens, PAL

Standards
• IEEE 802.3 (10Base-T Ethernet)
• IEEE 802.3u (100Base-TX Fast Ethernet)
• IEEE 802.3af (Power over Ethernet)

General
• 32-bit ARM9 RISC CPU
• 16 MByte video frame buffer
• Image buffer: 200 frames (CIF)
• 8 MByte flash memory
• 32 MByte SDRAM
• Supported image resolutions: D1 (720 x 576), VGA (640 x 576), CIF (352 x 288)
• Audio support:
  - Full duplex
  - Bandwidth: 300 Hz to 3.4 kHz
  - Audio input: 3.5 mm / 1.8" microphone input jack
  - Audio output: 3.5 mm / 1.8" speaker output jack
• Protocols supported: TCP/IP, UDP, HTTP, HTTPS, FTP, SMTP, DHCP, DNS, ARP, ICMP, POP3, RTSP, RTC
• Certifications: FCC Class B, RF: EN300328, EMC: EN301489-1/-7, Safety: EN60950-1

Image Sensor and Lens Specification
• 1/3" SONY Super HAD CCD sensor
• 470k pixel array
• S/N ratio: > 48 dB
• Video output: 1.0 Vp-p (75 Ohms, composite)
• Automatic white balance control
• Image Control: Brightness, Contrast, Saturation, Hue and Color killer
• Minimum illumination: 0 lux with IR LEDs on
• Electronic shutter: 1/50 - 1/10,000 sec.
• Focal length 6.0 mm, angular field of view 53˚, object distance 1 m to infinity

LEDs
• Power
• Network connection
• Camera operation

Environmental
• Dimensions: 87 (W) x 158 (L) x 45 (H) mm (3.4 x 6.2 x 1.8 in.)
• Weight: 1.1 kg (2.34 lbs.)
• Operating temperature: 0 – 50°C (32 – 122°F)
• Operating humidity: 20 – 80% RH, non-condensing
• Storage temperature: 0 – 60°C (0 – 149°F)

Power
• External power adapter: 12 V DC, 1.5 A
• Power consumption: 3.0 Watts (maximum)

System Requirements
• Windows 2000, XP, Vista, Linux, Mac OS X
• Computer with network connection
• Web browser support:
  - MS Internet Explorer 5.0 or higher (ActiveX + Java)
  - Mozilla 1.x, Mozilla Firefox (Java)
  - Netscape Navigator 6.0 or higher (Java)
  - Opera (Java)
  - Safari (Java)
  - Konqueror (Java)

Package Contents
• Pro Series Night Vision Network Camera
• User manual
• External power adapter
• Software CD

Pro Series Night Vision Network Camera 550314
MPEG4, CCD, Day/Night, IR Lens, NTSC

Standards
• IEEE 802.3 (10Base-T Ethernet)
• IEEE 802.3u (100Base-TX Fast Ethernet)
• IEEE 802.3af (Power over Ethernet)

General
• 32-bit ARM9 RISC CPU
• 16 MByte video frame buffer
• Image buffer: 200 frames (CIF)
• 8 MByte flash memory
• 32 MByte SDRAM
• Supported image resolutions: D1 (720 x 480), VGA (640 x 480), CIF (352 x 240)
• Audio support:
  - Full duplex
  - Bandwidth: 300 Hz to 3.4 kHz
  - Audio input: 3.5 mm / 1.8" microphone input jack
  - Audio output: 3.5 mm / 1.8" speaker output jack
• Protocols supported: TCP/IP, UDP, HTTP, HTTPS, FTP, SMTP, DHCP, DNS, ARP, ICMP, RTSP, RTC
• Certifications: FCC Class B, RF: EN300328, EMC: EN301489-1/-7, Safety: EN60950-1

Image Sensor and Lens Specification
• 1/3" SONY Super HAD CCD sensor
• 410k pixel array
• S/N ratio: > 48 dB
• Video output: 1.0 Vp-p (75 Ohms, composite)
• Automatic white balance control
• Image Control: Brightness, Contrast, Saturation, Hue and Color killer
• Minimum illumination: 0 lux with IR LEDs on
• Electronic shutter: 1/60 - 1/10.000 sec.
• Focal length 6.0 mm, angular field of view 53˚, object distance 1 m to infinity

LEDs
• Power
• Network connection
• Camera operation

Environmental
• Dimensions: 87 (W) x 158 (L) x 45 (H) mm (3.4 x 6.2 x 1.8 in.)
• Weight: 1.1 kg (2.34 lbs.)
• Operating temperature: 0 – 50°C (32 – 122°F)
• Operating humidity: 20 – 80% RH, non-condensing
• Storage temperature: 0 – 60°C (0 – 149°F)

Power
• External power adapter: 12 V DC, 1.5 A
• Power consumption: 3.0 Watts (maximum)

System Requirements
• Windows 2000, XP, Vista, Linux, Mac OS X
• Computer with network connection
• Web browser support:
  - MS Internet Explorer 5.0 or higher (ActiveX + Java)
  - Mozilla 1.x, Mozilla Firefox (Java)
  - Netscape Navigator 6.0 or higher (Java)
  - Opera (Java)
  - Safari (Java)
  - Konqueror (Java)

Pro Series Wireless Night Vision Network Camera 550307
MPEG4, CCD, Day/Night, IR Lens, PAL

Standards
• IEEE 802.3 (10Base-T Ethernet)
• IEEE 802.3u (100Base-TX Fast Ethernet)
• IEEE 802.3af (Power over Ethernet)
• IEEE 802.11b (11 Mbps Wireless LAN)
• IEEE 802.11g (54 Mbps Wireless LAN)

General
• 32-bit ARM9 RISC CPU
• 16 MByte video frame buffer
• Image buffer: 200 frames (CIF)
• 8 MByte flash memory, 32 MByte SDRAM
• Supported image resolutions: D1 (720 x 576), VGA (640 x 576), CIF (352 x 288)
• Audio support:
  - Full duplex
  - Bandwidth: 300 Hz to 3.4 kHz
  - Audio input: 3.5 mm / 1.8" microphone input jack
  - Audio output: 3.5 mm / 1.8" speaker output jack
• Protocols supported: TCP/IP, UDP, HTTP, HTTPS, FTP, SMTP, DHCP, DNS, ARP, ICMP, RTSP, RTC
• Certifications: FCC Class B, RF: EN300328, EMC: EN301489-1/-7, Safety: EN60950-1

Wireless
• Data rates:
  - IEEE 802.11b (11 Mbps, 5.5 Mbps, 2 Mbps, 1 Mbps)
  - IEEE 802.11g (54 Mbps, 48 Mbps, 36 Mbps, 24 Mbps, 18 Mbps, 12 Mbps, 9 Mbps, 6 Mbps)
• Data encryption: WEP (64-bit & 128-bit), WPA- and WPA2-PSK (with TKIP and AES authentication)
• Antenna: single detachable dipole antenna with RP-SMA connector, 2 dBi gain
• Operation modes: Infrastructure, Ad Hoc
• Preamble modes: long, short, auto

Image Sensor and Lens Specification
• 1/3" SONY Super HAD CCD sensor
• 470k pixel array
• S/N ratio: > 48 dB
• Video output: 1.0 Vp-p (75 Ohms, composite)
• Automatic white balance control
• Image Control: Brightness, Contrast, Saturation, Hue and Color killer
• Minimum illumination: 0 lux with IR LEDs on
• Electronic shutter: 1/50 - 1/10,000 sec.
• Focal length 6.0 mm, angular field of view 53˚, object distance 1 m to infinity

LEDs
• Power
• Network connection
• Camera operation

Environmental
• Dimensions: 87 (W) x 158 (L) x 45 (H) mm (3.4 x 6.2 x 1.8 in.)
• Weight: 1.1 kg (2.34 lbs.)
• Operating temperature: 0 – 50°C (32 – 122°F)
• Operating humidity: 20 – 80% RH, non-condensing
• Storage temperature: 0 – 60°C (0 – 149°F)

Power
• External power adapter: 12 V DC, 1.5 A
• Power consumption: 3.0 Watts (maximum)

System Requirements
• Windows 2000, XP, Vista, Linux, Mac OS X
• Computer with network connection
• Web browser support:
  - MS Internet Explorer 5.0 or higher (ActiveX + Java)
  - Mozilla 1.x, Mozilla Firefox (Java)
  - Netscape Navigator 6.0 or higher (Java)
  - Opera (Java)
  - Safari (Java)
  - Konqueror (Java)

Pro Series Wireless Night Vision Network Camera 550321
MPEG4, CCD, Day/Night, IR Lens, NTSC

Standards
• IEEE 802.3 (10Base-T Ethernet)
• IEEE 802.3u (100Base-TX Fast Ethernet)
• IEEE 802.3af (Power over Ethernet)
• IEEE 802.11b (11 Mbps Wireless LAN)
• IEEE 802.11g (54 Mbps Wireless LAN)

General
• 32-bit ARM9 RISC CPU
• 16 MByte video frame buffer
• Image buffer: 200 frames (CIF)
• 8 MByte flash memory, 32 MByte SDRAM
• Supported image resolutions: D1 (720 x 480), VGA (640 x 480), CIF (352 x 240)
• Audio support:
  - Full duplex
  - Bandwidth: 300 Hz to 3.4 kHz
  - Audio input: 3.5 mm / 1.8" microphone input jack
  - Audio output: 3.5 mm / 1.8" speaker output jack
• Protocols supported: TCP/IP, UDP, HTTP, HTTPS, FTP, SMTP, DHCP, DNS, ARP, ICMP, RTSP, RTC
• Certifications: FCC Class B, RF: EN300328, EMC: EN301489-1/-7, Safety: EN60950-1

Wireless
• Data rates:
  - IEEE 802.11b (11 Mbps, 5.5 Mbps, 2 Mbps, 1 Mbps)
  - IEEE 802.11g (54 Mbps, 48 Mbps, 36 Mbps, 24 Mbps, 18 Mbps, 12 Mbps, 9 Mbps, 6 Mbps)
• Data encryption: WEP (64-bit & 128-bit), WPA- and WPA2-PSK (with TKIP and AES authentication)
• Antenna: single detachable dipole antenna with RP-SMA connector, 2 dBi gain
• Operation modes: Infrastructure, Ad Hoc
• Preamble modes: long, short, auto

Image Sensor and Lens Specification
• 1/3" SONY Super HAD CCD sensor
• 410k pixel array
• S/N ratio: > 48 dB
• Video output: 1.0 Vp-p (75 Ohms, composite)
• Automatic white balance control
• Image Control: Brightness, Contrast, Saturation, Hue and Color killer
• Minimum illumination: 0 lux with IR LEDs on
• Electronic shutter: 1/60 - 1/10,000 sec.
• Focal length 6.0 mm, angular field of view 53˚, object distance 1 m to infinity

LEDs
• Power
• Network connection
• Camera operation

Environmental
• Dimensions: 87 (W) x 158 (L) x 45 (H) mm (3.4 x 6.2 x 1.8 in.)
• Weight: 1.1 kg (2.34 lbs.)
• Operating temperature: 0 – 50°C (32 – 122°F)
• Operating humidity: 20 – 80% RH, non-condensing
• Storage temperature: 0 – 60°C (0 – 149°F)

Power
• External power adapter: 12 V DC, 1.5 A
• Power consumption: 3.0 Watts (maximum)

System Requirements
• Windows 2000, XP, Vista, Linux, Mac OS X
• Computer with network connection
• Web browser support:
  - MS Internet Explorer 5.0 or higher (ActiveX + Java)
  - Mozilla 1.x, Mozilla Firefox (Java)
  - Netscape Navigator 6.0 or higher (Java)
  - Opera (Java)
  - Safari (Java)
  - Konqueror (Java)

Pro Series Digital PTZ Network Camera 550468
MPEG4 + M-JPEG Dual Mode, 2.0 Megapixel CMOS, PAL/NTSC

Standards
• IEEE 802.3 (10Base-T Ethernet)
• IEEE 802.3u (100Base-TX Fast Ethernet)
• IEEE 802.3af (Power over Ethernet)

General
• 32-bit ARM9 RISC CPU
• 16 MByte video frame buffer
• Image buffer: 200 frames (CIF)
• 8 MByte flash memory
• 32 MByte SDRAM
• Supported image resolutions: D1 (720 x 480), VGA (640 x 480), CIF (352 x 240)
• Video frame rate: max. 25 fps @ D1; 25 fps @ VGA; 25 fps @ CIF
• Audio support:
  - Full duplex
  - Bandwidth: 300 Hz – 3.4 kHz
  - Audio input: 3.5 mm / 1.8" microphone input jack
  - Audio output: 3.5 mm / 1.8" speaker output jack
• Protocols supported: TCP/IP, UDP, HTTP, HTTPS, FTP, SMTP, DHCP, DNS, ARP, ICMP, RTSP, RTC
• Certifications: FCC Class B, RF: EN300328, EMC: EN301489-1/-7, Safety: EN60950-1

Image Sensor and Lens Specification
• 1/3.2" Micron Progressive Scan CMOS sensor
• 2.0 Megapixel resolution (1,668 H x 1,248 V)
• S/N ratio: 42.3 dB (max.)
• Pixel size: 2.8µm x 2.8µm
• Shutter type: Electronic rolling shutter (ERS)
• Automatic on-the-fly defect correction, exposure, white balance, black reference, flicker avoidance and color saturation
• Manual brightness, contrast, saturation, hue, sharpness control
• Manual white balance control
• Minimum illumination: 0.1 lux
• Focal length 6.0 mm, angular field of view 53˚, object distance 1 m to infinity

LEDs
• Power
• Network connection
• Camera operation

Environmental
• Dimensions: 87 (W) x 158 (L) x 45 (H) mm (3.4 x 6.2 x 1.8 in.)
• Weight: 1.1 kg (2.34 lbs.)
• Operating temperature: 0 – 50°C (32 – 122°F)
• Operating humidity: 20 – 80% RH, non-condensing
• Storage temperature: 0 – 60°C (0 – 149°F)

Power
• External power adapter: 12 V DC, 1.5 A
• Power consumption: 6.0 Watts (maximum)

System Requirements
• Windows 2000, XP, Vista, Linux, Mac OS X
• Computer with network connection
• Web browser support:
  - MS Internet Explorer 5.0 or higher (ActiveX + Java)
  - Mozilla 1.x, Mozilla Firefox (Java)
  - Netscape Navigator 6.0 or higher (Java)
  - Opera (Java)
  - Safari (Java)
  - Konqueror (Java)

Package Contents
• Pro Series Digital PTZ Network Camera
• User manual
• External power adapter
• Software CD

Pro Series Digital PTZ Wireless Network Camera 550482
MPEG4 + M-JPEG Dual Mode, 2.0 Megapixel CMOS, PAL/NTSC

Standards
• IEEE 802.3 (10Base-T Ethernet)
• IEEE 802.3u (100Base-TX Fast Ethernet)
• IEEE 802.3af (Power over Ethernet)
• IEEE 802.11b (11 Mbps Wireless LAN)
• IEEE 802.11g (54 Mbps Wireless LAN)

General
• 32-bit ARM9 RISC CPU
• 16 MByte video frame buffer, Image buffer: 200 frames (CIF)
• 8 MByte flash memory, 32 MByte SDRAM
• Supported image resolutions: D1 (720 x 480), VGA (640 x 480), CIF (352 x 240)
• Video frame rate: max. 25 fps @ D1; 25 fps @ VGA; 25 fps @ CIF
• Audio support:
  - Full duplex
  - Bandwidth: 300 Hz – 3.4 kHz
  - Audio input: 3.5 mm / 1.8" microphone input jack
  - Audio output: 3.5 mm / 1.8" speaker output jack
• Protocols supported: TCP/IP, UDP, HTTP, HTTPS, FTP, SMTP, DHCP, DNS, ARP, ICMP, RTSP, RTC
• Certifications: FCC Class B, RF: EN300328, EMC: EN301489-1/-7, Safety: EN60950-1

Wireless
• Data rates:
  - IEEE 802.11b (11 Mbps, 5.5 Mbps, 2 Mbps, 1 Mbps)
  - IEEE 802.11g (54 Mbps, 48 Mbps, 36 Mbps, 24 Mbps, 18 Mbps, 12 Mbps, 9 Mbps, 6 Mbps)
• Data encryption: WEP (64-bit & 128-bit), WPA- and WPA2-PSK (with TKIP and AES authentication)
• Antenna: single detachable dipole antenna with RP-SMA connector, 2 dBi gain
• Operation modes: Infrastructure, Ad Hoc, Preamble modes: long, short, auto

Image Sensor and Lens Specification
• 1/3.2" Micron Progressive Scan CMOS sensor
• 2.0 Megapixel resolution (1,668 H x 1,248 V)
• S/N ratio: 42.3 dB (max.), Pixel size: 2.8µm x 2.8µm
• Shutter type: Electronic rolling shutter (ERS)
• Automatic on-the-fly defect correction, exposure, white balance, black reference, flicker avoidance and color saturation
• Manual brightness, contrast, saturation, hue, sharpness control
• Manual white balance control
• Minimum illumination: 0.1 lux
• Focal length 6.0 mm, angular field of view 53˚, object distance 1 m to infinity

LEDs
• Power
• Network connection
• Camera operation

Environmental
• Dimensions: 87 (W) x 158 (L) x 45 (H) mm (3.4 x 6.2 x 1.8 in.)
• Weight: 1.1 kg (2.34 lbs.)
• Operating temperature: 0 – 50°C (32 – 122°F), Storage temperature: 0 – 60°C (0 – 149°F)
• Operating humidity: 20 – 80% RH, non-condensing

Power
• External power adapter: 12 V DC, 1.5 A, Power consumption: 6.0 Watts (maximum)

System Requirements
• Windows 2000, XP, Vista, Linux, Mac OS X
• Computer with network connection
• Web browser support:
  - MS Internet Explorer 5.0 or higher (ActiveX + Java)
  - Mozilla 1.x, Mozilla Firefox (Java)
  - Opera (Java), Safari (Java) and Konqueror (Java)

Package Contents
• Pro Series Digital PTZ Wireless Network Camera
• User manual
• External power adapter
• Software CD

Pro Series Network Video Server 550376
MPEG4 + M-JPEG Dual Mode, Two-way Audio, PAL/NTSC

Standards
• IEEE 802.3 (10Base-T Ethernet)
• IEEE 802.3u (100Base-TX Fast Ethernet)
• IEEE 802.3af (Power over Ethernet)

General
• 32-bit ARM9 RISC CPU
• 16 MByte video frame buffer
• Image Buffer: 200 frames (CIF)
• 8 MByte flash memory
• 32 MByte SDRAM
• Supported image resolutions:
  - PAL: D1 (720 x 576), VGA (640 x 576), CIF (352 x 288)
  - NTSC: D1 (720 x 480), VGA (640 x 480), CIF (352 x 240)
• Video frame rate: max. 30 fps @ D1, VGA and CIF
• Audio support:
  - Full duplex
  - Bandwidth: 300 Hz to 3.4 kHz
  - Audio input: 3.5 mm / 1.8" microphone input jack
  - Audio output: 3.5 mm / 1.8" speaker output jack
• Protocols supported: TCP/IP, UDP, HTTP, FTP, SMTP, DHCP, DNS, ARP, ICMP, RTSP, RTC
• Certifications: FCC Part 15, Subpart B Class A, CE Directive 89/336/EEC (EMC Directive)

PTZ Control
• Selectable baud rate (2400, 4800, 9600 bps)
• Selectable ID (1~255)
• Supported protocols: Pelco D/P
• Supported cameras: HONEYWELL HRX-2000, VICON V1311RB-VPS, LG LPT-A100L, SAMSUNG TECHWIN, SAMSUNG ELECTRONICS MRX-1000, INTER-M, DONGYANG UNITECH DRX302A

External IO
• RS-485 port for PTZ control
• DC output for power supply to external device (12V, 150 mA)
• Sensor input
• Alarm output

LEDs
• Power
• Network
• On Air / Network Video Server active

Environmental
• Dimensions: 142 (W) x 145 (L) x 31 (H) mm (5.6 x 5.7 x 1.2 in.)
• Weight: 1.3 kg (2.8 lbs.)
• Operating temperature: 0 – 50°C (32 – 122°F)
• Operating humidity: 20 – 80% RH, non-condensing
• Storage temperature: 0 – 60°C (0 – 149°F)

Power
• External power adapter: 12 V DC, 1.5 A
• Power consumption: 6.0 Watts (maximum)

System Requirements
• Windows 2000, XP, Vista, Linux, Mac OS X
• Computer with network connection
• Web browser support:
  - MS Internet Explorer 5.0 or higher (ActiveX + Java)
  - Mozilla 1.x, Mozilla Firefox (Java)
  - Netscape Navigator 6.0 or higher (Java)
  - Opera (Java)
  - Safari (Java)
  - Konqueror (Java)

Pro Series Network Camera 550710
JPEG, CMOS, PAL/NTSC

Standards
• IEEE 802.3 (10Base-T Ethernet)
• IEEE 802.3u (100Base-TX Fast Ethernet)

General
• 32-bit ARM9 RISC CPU
• 2 MByte flash memory
• 8 MByte SDRAM
• Supported image resolutions: VGA (640 x 480), CIF (320 x 240), QCIF (160 x 120)
• Frame rate: 30 fps @ 320 x 240, up to 8 fps @ 640 x 480
• Protocols supported: TTCP/IP, ARP, FTP, HTTP, POP3, SMTP, MIBII, Proxy Agent, BOOTP, DHCP, DNS
• Maximum throughput: 9 Mbps
• Certifications: FCC Class A, CE EN55022/1994, EN61000-3-2 & 3: 1995, EN50082-1: 1997

Image Sensor and Lens Specification
• 1/3" CMOS lens
• 326,668 pixels, 24-bit color, YUV digital output
• 664 x 492 pixel array elements
• 2.5 minimum Lux
• Image control, Brightness, Contrast, Saturation, Hue, Exposure, Sharpness, Backlight compensation
• Electronic shutter: 1/30 - 1/15,734 sec.
• Replaceable standard 1/3" CS mount lens
• Focal length 6.0 mm, angular field of view 54˚, object distance 0.1 m to infinity
• Maximum relative aperture F1.8

LEDs
• Power
• Network connection
• Camera operation

Power
• External power adapter: 12 V DC, 1.5 A

System Requirements
• Windows 2000, XP, Vista, Linux, Mac OS X
• Computer with network connection
• Web browser support:
  - MS Internet Explorer 5.0 or higher (ActiveX + Java)
  - Mozilla 1.x, Mozilla Firefox (Java)
  - Netscape Navigator 6.0 or higher (Java)
  - Opera (Java)
  - Safari (Java)
  - Konqueror (Java)

Package Contents
• Pro Series Network Camera
• User manual
• External power adapter
• Software CD

- notes -

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